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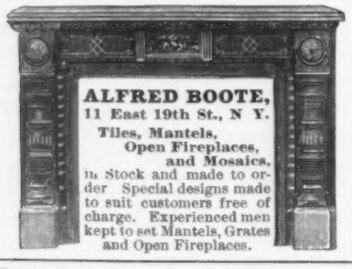

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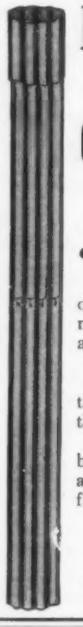

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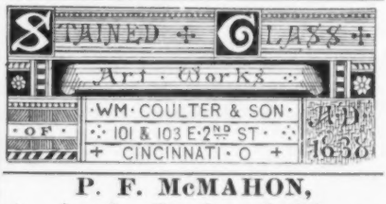

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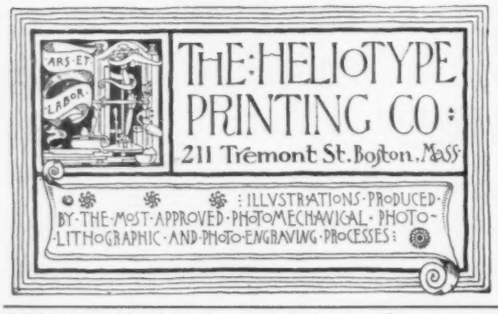

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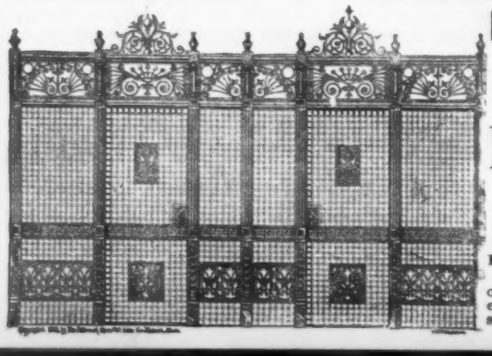
THE COURSE IN ARCHITECTURE
embraces, besides the necessary scientific and mathematical subjects, the study of architectural history, and the constant practice of original design.
Students in Architecture are received into a two year's special course.
FRANCIS A. WALKER, Prest. J. P. MUNROE, Sec'y.



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Manufacturers of
Iron, Wire and Brass
Elevator Enclosures.
We have recently furnished the new **Board of Trade and Royal Insurance Buildings,** of Chicago, Ill., with Iron and Brass Elevator enclosures, to which we point as a standing reference. Write for estimates and particulars.

Keep Your Walls Dry.
A New Cornice Gutter,
In Wood or Metal, set on furs, with a space behind for over-flow water.

Patented May 12, 1885,
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Infringements Prosecuted.

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ELEVATORS, For Freight and Passengers.
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CREOSOTE **STAINS**
DO NOT SMELL-FADE OR RAISE THE GRAIN.
SAM'L CABOT SOLE MF'R.
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SPECIFY INTERIOR OR EXTERIOR.

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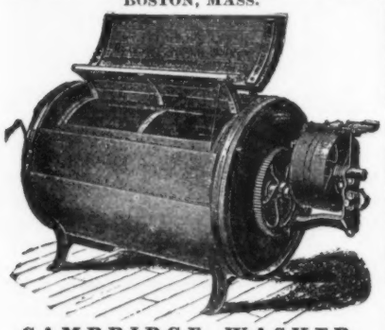

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Established 1853.

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Trees and Plants.
Parson & Sons Co.
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ESPECIALLY ADAPTED TO
Public Buildings, Private Residences, Mills, Warehouses, Stores, and all Mercantile Structures.

IT IS POSITIVELY FIRE-PROOF.

WIRE LATHING possesses the following qualities:
IT IS NOT COSTLY.
IT IS EASILY AND CHEAPLY APPLIED.
PLASTERING ON THE WIRE LATH WILL NOT CRACK.
THE LATH WILL NOT CORRODE.
The plastering, when applied, **clinches** on both sides of the wire, **forming a double surface.**
THE WIRE LATHING is extensively used by the United States Government in its Custom House Court House, and Post Office Buildings.
It is indorsed by the leading Insurance Companies, who have applied it to their own fine edifices.
Full information given on application to the
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NATURAL WOOD FINISHING.

Good taste and artistic appreciation demand the preservation of Nature's colors in finishing the interior wood-work of your house, therefore, use only

BERRY BROTHERS'
HARD OIL FINISH,

which preserves, heightens, and brings out the natural color of all woods. For the interior wood-work of *public buildings* and *private houses* this article has never been equalled, always maintaining its standard character amid the many so-called imitations its success has brought upon the market. See that every package bears our brand or label. Samples finished wood furnished on application.

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For outside doors use Berry Brothers' "ELASTIC OUTSIDE FINISH."

BUILDING MATERIALS.

Reported for the American Architect and Building News.

BRICK.—₱ M.	New York. (*Wholesale Prices.*)	Boston. (*Prices to Builders and Contractors.*)	Chicago. (*Prices to Builders and Contractors.*)	Philadelphia (*Prices to Builders and Contractors.*)
Common: *Cargo afloat.*				
Pale	$4 50 @ $4 75	Eastern	Building Brick	Sq. Hard @ 10 00
Jersey	6 50 @ 7 00	7 00 @ 7 50	9 00 @ 10 00	" @ 8 00
Long Island	8 25 @ 8 75	Bay State Hard		Salmon @ 6 00
Up River	@	9 00		Sq. " @ 8 00
Haverstraw Bay	@	Domestic Com.	Indiana Pressd	Light Stretchers @ 10 00
" 1st	@	8 00 @ 9 00	16 00 @ 22 00	Medium " @ 11 00
Hollow	@ 13 00	Domestic Face	St. Louis Fronts	Red " @ 12 00
Fronts:		19 00 @ 20 00	@ 27 00	Dark " @ 14 00
Croton, Brown	12 00 @ 13 00	Philadelphia		Pressed 22 00 @ 24 00
" dark	12 00 @ 14 00	40 00 @ 45 00		Best Paving @ 15 00
" red	12 00 @ 14 00	Phila. mould	22 00 @ 29 00	Second " @ 12 00
Chicago pressed		50 00 @ 80 00	65 00 @ 350 00	Third " @ 11 00
Chicago Moulded			@ 50 00	
Baltimore	37 00 @ 41 00		@ 45 00	
Glens Falls — white	30 00 @ 35 00	Glens Falls	38 00 @	
Philadelphia	24 00 @ 25 00	25 00 @ 26 00	25 00 @	
Trenton	24 00 @ 25 00		60 00 @ 100 00	Dom. @ 65
Milwaukee		Glens Falls	30 @	@ 85
Moulded:		Mould.	35 @	
Clark's Glens Falls — Red	25 00 @ 27 00	30 00 @ 35 00	55 00 @ 65 00	
" — White	30 00 @ 35 00	35 00 @ 40 00		
White " Mold	45 00 @ 60 00	45 00 @ 60 00	@ 100 00	
Enamelled: *Imp.*			@ 120 00	
Enamelled (edge.)	85 00 @ 100 00	@		
Enamelled (edge and end)	90 00 @ 115 00	@	*Not Sold.*	
CEMENT, LIME, etc.—(₱ *cask.*)			1 05 @ 1 30	1 15 @ 1 50
Rosendale Cement	1 20 @ 1 25	@ 1 50	1 00 @ 1 25	Book, Shoobridge
Louisville "			3 25 @ 3 40	2 85 @ 3 25
Utica, Akron, Buffalo, Milw'kee.	*Not sold.*	*Not sold.*	3 25 @ 3 50	2 85 @ 3 25
Portland, English (Gibbs)	2 50 @ 3 10	@ 3 00	3 15 @ 3 35	2 85 @ 3 25
" " (K. B. & S.)	2 75 @ 3 10		3 15 @ 3 35	2 85 @ 3 25
" " (Burham)	2 50 @ 2 80		3 75 @ 4 25	2 75 @ 3 25
" " (White's)	2 65 @ 3 00		*Not Sold.*	Hemmoor
" French (Lafarge)	3 50 @ 4 50	*Not sold.*	3 25 @ 3 50	2 85 @ 3 25
" German (Alsen)	2 75 @ 3 15	3 00 @ 3 50	3 15 @ 3 35	2 65 @ 3 00
" " (Fewer)	2 45 @ 2 70	3 15 @ 3 35	3 00 @ 3 25	Josson
" " (Vorwohler)	2 50 @ 3 25		3 00 @ 3 25	2 65 @ 3 00
" " (Lagerdofer)	2 25 @ 2 55	*Not sold.*	*Not Sold.*	2 85 @ 3 25
" " (Dyckerhoff)	2 75 @ 3 15	3 00 @ 3 50	2 75 @ 3 00	2 85 @ 3 25
" " (Hanover)	2 50 @ 3 00		2 75 @ 3 25	2 50 @ 2 75
" American (Saylor's)	2 15 @ 2 30	2 15 @ 2 50	3 00 @ 3 50	3 00 @ 3 50
Roman	2 75 @ 3 00	@ 3 20	2 75 @ 3 25	6 50 @ 7 00
Keene's coarse	5 00 @ 6 50	@ 7 50	7 00 @ 7 50	11 50 @ 12 00
" superfine	8 75 @ 11 00	@ 11 50	11 00 @ 12 00	
Lime:			*Not sold.*	White Lime
Lime of Teil	@ 5 00			28 @ 85 ₱ bush.
Hydraulic Lime	@ 1 45	@ 145		White Mash
Chicago Lime in bulk			60 @ 65	1 25 @ 150
Wisconsin "			75 @ 85	1 00 @ 1 00
Rockland and Rockport, (Com.)	@ 1 00	@ 1 15	*Not sold.*	
Rockland and Rockport, finish	@ 1 20	@ 1 20	*Not sold.*	*Not sold.*
State, com. cargo rates (nom.)	@ 90	*Not sold.*	*Not sold.*	*Not sold.*
State, finishing "	@ 1 10	*Not sold.*	*Not sold.*	1 25 @ 2 25
Plaster of Paris (calcined.)	@ 1 25	1 65 @ 1 90	@ 1 75	1 75 @ 2 50
" (casting)	@ 1 45	@ 2 25	@ 1 75	22 @ 30
Hair (Cattle) ₱ *bush.*	21 @ 25	@ 30	20 @ 25	30 @ 35
" (Goat)	30 @ 35	@ 30	35 @ 40	@ 1 50
Sand, ₱ *load*	1 00 @ 1 25	1 00 @ 1 75	100 @ 1 25	
STONE. (₱ *cubic foot, rough.*)				55 @ 65
Granite: (*Maine*)		@ 60		80 @ 90
Limestone:		95 @ 1 00	50 @	
Bedford	@ 1 00		35 @ 55	
Joliet	@		35 @ 60	
Lemont	@		80 @ 90	
Serpentine	@			4 50 ₱ Perch.

(*Continued on page vi.*)

ACCIDENTS

Are always happening to those who "Don't Travel Much" as well as to those who do. The quietest Professional and Business Men are as liable as any others to the Thousand Hazards of Life, at home or abroad.

INSURE IN THE TRAVELERS
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Which pays $3,000 a day to Accident Claimants. Costs but $5 per Year for $1,000 Insurance, with $5 Weekly Indemnity, to Professional and Business Men. Larger Sums at proportionate rates. No extra charge for European Travel and Residence. Also issues best Life and Endowment Policies.

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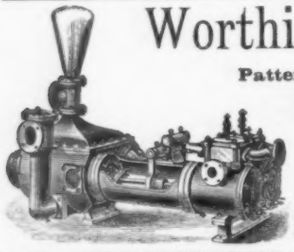

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Patterns specially adapted to
HOUSE TANK SERVICE
And Hydraulic Elevators.
ABSOLUTELY NOISELESS.
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BOSTON, CHICAGO, ST. LOUIS, CINCINNATI, CLEVELAND, SAN FRANCISCO, PITTSBURGH.

BUILDING MATERIALS.

	New York. (Wholesale Prices.)	Boston. (Prices to Builders and Contractors.)	Chicago. (Prices to Builders and Contractors.)	Philadelphia. (Prices to Builders and Contractors.)
Foundation:				
Dimension	@	5 00 ℔ ton	20 @ 28	1 45 @ 2 50
Block	@	4 60 ℔ perch	8 50 ℔ cord.	Conshocken
Rubble	@	1 25 @ 1 50	8 50 @	1 45 @ 2 50
Bluestone: (℔ *sq. ft.*)				
Sidewalk	30 @ 5 00	40 @ 1 75	75 @ 1 00	1 in. th. 10 @ 19
Planed	50 @ 6 00	75	50 @ 1 00	37 @ 45
Sandstone,				
Longmeadow	@ 80	75 @ 85		1 05 @ 1 15
Kibbe	@ 90	85 @ 95		
Brown (Connecticut)	1 00 @	1 25 @ 1 45	1 50 ℔ cub. ft.	1 05 @ 1 35
Amherst } Ohio	90 @ 95	90 @ 1 00	55 @ 65	80 @ 1 00
Berea } Ohio	75 @ 1 00	80 @ 90	45 @ 55	
Berlin } Ohio	75 @ 1 00	80 @ 90	55 @ 65	
Belleville	80 @ 1 25	1 25 @ 1 35	"	1 10 @ 1 40
New Brunswick and Nova Scotia	@ 1 00	75 @ 1 00	"	1 00 @ 1 10
Caen	@	@ 2 00	"	1 15 @ 1 50
Marble (℔ *cu. ft.*)				
Lee, Mass.	@	1 75 @ 2 50	*Not sold.*	2 00 @ 2 50
Rutland, white	@	@ 3 00	3 50 @ 6 00	2 25 @ 2 50
Sutherland Falls	1 25 @ 1 75	@ 2 00	3 50 @ 6 00	1 70 @ 3 00
Glens Falls, black	@	2 00 @ 3 00	*Not sold.*	4 00 @ 4 50
Italian, blue-veined	@	50 @ 60	@ 4 40	2 50 @ 2 75
" Sienna	@	3 00 @ 3 50	*Not sold.*	@ 5 00
Tennessee, red	@	1 25 @ 2 50	@ 4 00	4 00 @ 6 00
" Knoxville	@	85 @ 90	@ 4 00	3 00 @ 4 00
Pennsylvania, blue	@		*Not sold.*	2,00 @ 3 00
Vermont, white	@	1 50 @ 2 00	3 50 @ 6 00	2 25 @ 3 00
Slate: Roofing (℔ *square*)				
" green	7 00 @ 8 00	4 50 @ 7 00	6 25 @ 8 10	5 00 @ 7 00
" " unfading	@ 5 75	@ 5 75		5 00 @ 7 00
" purple	7 00 @ 8 50	5 50 @ 6 50	@ 8 60	@ 11 00
" red	@ 15 00	13 00 @ 14 00	— @ 16 00	@ 11 00
" black, Lehigh	— —	Brownville, Me.	7 20 @ 7 60	@ 3 00
" " Chapmans	— —	6 50 @ 9 00	7 30 @ 8 00	@ 5 35
" Unfading Black, Monson, Me.	5 50 @ 8 00	5 50 @ 8 00	6 00 @ 8 50	@ 5 35
Tiles, Am. ℔ M.	@		*Not sold.*	@ 27 00
N. Peach Bottom, warranted unfading				@ 7 00
PAINTS. (*In oil,* ℔ *lb.*)				
White lead, Am.	6½ @ 6¾	7 @ 7½	6¼ @ 7	@ 7
" Zinc, "	5 @ 8¾	@ 8	7 @ 10½	@ 7½
Red lead, Am.,	6 @ 6¾	6 @ 6½	6½ @ 6¾	@ 7
" Venetian	6 @ 10½	7 @ 12	1¾ @ 2½	dry Eng. @ 1¾
" Vermilion	65 @ 70	55 @ 60 dry	55 @ 60	Eng. 18
Red Indian, Eng.	12 @ 20	12 @ 20	12 @ 20	@ 9
Yellow Ochre	6 @ 15	7 @ 12	3 @ 15	dry Am. @ 1¾
" Chrome	12 @ 20	18 @ 25	15 @ 25	@ 20
Green (chrome)	8 @ 13	8 @ 20	10 @ 20	@ 20
Green, Paris,	25 @ 40	25 @ 40	18 @ 35	@ 20
Black, lamp,	15 @ 25	15 @ 25	8 @ 30	" @ 16
Blue, ultramarine	12 @ 18	18 @ 30	12 @ 35	@ 20
Oil, linseed, (raw) (℔ gal.)	43½ @ 44	45 @ 50	42 @ 43	@ 45
" " boiled (℔ gal.)	46½ @ 47	48 @ 53	45 @ 46	@ 48
Turpentine (℔ gal.)	47½ @ 48½	54 @ 61	@ 53	@ 40
Varnish, coach (℔ gal.)	@	1 50 @ 6 00	1 25 @ 2 00	@2 25
Shellac (℔ gal.)	@	2 50 @ 3 00	3 25 @ 4 00	@2 90
Putty	2 @ 3	2 @ 4	02 @ 02½	@ 2
Whiting	50 @ 65	1 @ 1½	1 @ 2	@ 1
Paris white, (Eng.,) (℔ cwt.)	2 @ 3	2 @ 3	2 @ 2¾	@ 1½
Litharge, Am.	5½ @ 5¾	6¼ @ 7	6¼ @ 6½	@ 7
Sienna (burnt)	12 @ 17½	14 @ 20	4 @ 16	@ 16
Umber, "	11 @ 16½	14 @ 20	2 @ 10	@ 14
HARDWARE.				
Nails: (*Per Cask.*)				
Spikes, (*wrought.*)	@ 2 65		3 50 @	per keg @ 2 90
10d. common	@ 2 40	@ 2 60	@ 2 50	@ 2 65
Shingle	@ 3 15	@ 3 35	@ 3 25	@ 3 15
Lath	@ 4 65	@ 4 85	@ 5 50	@ 5 25
(*Finishing nails according to size.*)			Add $1 50	per lb 11 @ 14
(*For casing nails add 75c. per keg.*)				Add 1 00 pr cask
Butts: 4"x 4" (℔ doz. pairs.)				
Plain	@ 1 00	@ 1 20	65 @ 1 00	@ 1 16
Japanned	@ 1 50	@ 1 75	*Not sold.*	1 75 @ 2 00
Acorn, Japanned	@ 1 50	@ 2 50	2 00 @ 3 75	1 75 @ 2 00
Acorn, Boston finish (℔ pair.)	@ 65	@ 75	*Not sold.*	@ 50
Bronze metal	@ 1 90	plain 2 25	2 00 @ 3 25	@ 1 37
Brass (for cupboards)	@ 10	@ 10	@ 12	@ 1 00
Ebony				@ 35
Apple wood				37 @ 1 00
Knobs: (℔ *Set.*)				
Mineral, best	@ 8	@ 10	8 @ 10	@ 08
Lava	@ 50	@ 75	65 @ 80	*Not sold.*
Hemacite	*Not sold*	@ 38	31 @ 40	25 @ 50
Porcelain	@ 30	@ 12	25 @ 30	@ 30
Glass, solid	*Not sold*	@ 75	*Not sold.*	1 75 @ 2 00
Glass, silvered	*Not sold*	88 @ 1 50	@ 1 50	1 75 @ 2 00
Bronze metal	75 @ 2 00	88 @ 2 00	75 @ 2 50	50 @ 3 50
Brass	1 00 @ 2 50	88 @ 2 00	1 50 @ 3 00	50 @ 3 50
Solder:		16 00 @ 17 00	13 00 @ 15 %	22 @ 35
Iron:				
I-Beams up to 12"	@ 3	@ 3	@ 4	30' 2½ @2¾
I-Beams above 12"	@ 3	@ 3	@ 4	
Channel-Beams up to 12"	@ 3	@ 3	@ 4	

(*Continued on page* vii.)

SMITH & NICHOLSON PATENTS.
Something New in HOD ELEVATORS.
50,000 Bricks and the required Mortar per day on 7th Story — The Speediest, Cheapest, Safest method of Elevating Material known. *Send for Circular to*
THE NATIONAL HOD ELEVATING CO., (LIMITED.)
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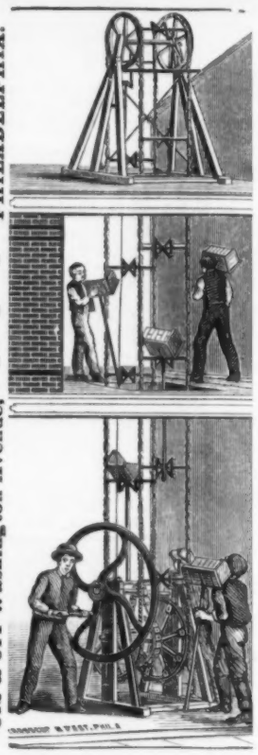

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J. REYNOLDS & SON,
FURNACE MANUFACTURERS.
Kitcheners, Grates, etc.
Send for Catalogue.
PHILADELPHIA, PA.

OUR HOMES
HOW TO HEAT & VENTILATE THEM.

New Edition of 96 pages, with additional matter, and illustrations of 45 of the finest residences in the country. A complete Manual on the subject of Sanitary Heating and Ventilating, besides giving valuable suggestions to those who are building or furnishing a home. The book is exceedingly artistic, and will be mailed free on receipt of 6 cents in stamps.
SMITH & ANTHONY STOVE CO., Boston, Mass.

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PLAIN AND ARTISTIC
GRATES
AND FIREPLACES
A SPECIALTY.
Also, Furnaces and Ranges.
Send for Illustrated Catalogue. 1435 Chestnut St., Philadelphia.

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Heaters, Grates and Ranges.
MATTHEW HALL,
1927 & 1929 Market Street,
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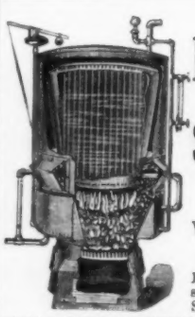

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Latest Improved
HOUSE-HEATING
Steam
Generator,
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Send for Catalogue and Price-list, giving full description of latest Improved Side-Feed Boilers.
THE GORTON BOILER MFG. CO., [Limited.]
110 Centre St., New York.

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The GOODWIN GAS STOVE & METER CO.,
MANUFACTURERS OF
The Sun Dial Gas Cooking and Heating Stoves.

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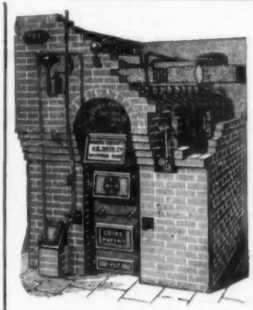
Waldo Bros., Agts., 88 Water St., Boston, Mass.



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HEATING APPARATUS,
For Public Buildings and Private Residences.
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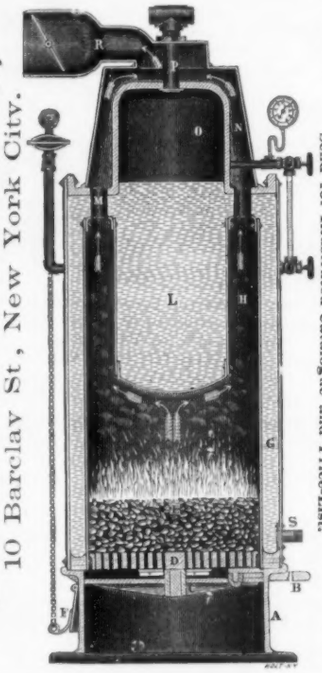

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Send for Illustrated Catalogue and Price-List.

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CONTRACTORS FOR
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Stores, Residences, Churches, and all Public Buildings. Plans, Specifications and Estimates furnished.
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STEAM WARMING.
BATES & JOHNSON,
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House Warming a Specialty. Estimates Furnished on Application.

SHIELDS & BROWN,
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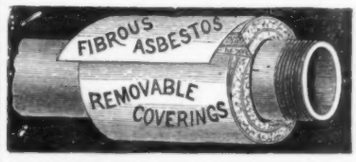
MANUFACTURERS AND SOLE PROPRIETORS OF
BRADLEY'S

FOR BOILERS AND STEAM PIPES.
Reduces Condensation of Steam.
FOR GAS AND WATER PIPES.
Prevents Sweating and Freezing.
The best Non-Conductor of Heat and Cold in the World.
Send for illustrated descriptive Circular, and name this paper.
132 Cedar Street, New York.



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This covering is made entirely of Asbestos, and can not be affected injuriously by heat or dampness, nor can it be made a harbor for vermin.
Asbestos Building-Felt, Fire-Proof Cements, &c.
THE CHALMERS-SPENCE CO.,
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REGISTERS MADE TO ORDER FROM THE SPECIAL DESIGNS OF ARCHITECTS.
Manufacturers of Warm-Air Registers, Ventilators, Ornamental Screens, Etc.
The Tuttle & Bailey Mfg. Co.,
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Of the latest and most beautiful designs, and all other Slate and Soapstone work on hand or made to order, JOSEPH S. MILLER & BROTHER, 1210 Ridge Avenue, Philadelphia, Pa. Successor to Wilson & Miller.
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THE FLORIDA
House - Heating Boiler.
(Catchpole's Improved.)
The cheapest and most economical Low-pressure Steam Boiler in use. Illustrated Catalogue free.
The FLORIDA BOILER WORKS, Geneva, N. Y.

BUILDING MATERIALS.

LUMBER.—℔ M.	New York. (Wholesale Prices.)	Boston. (Prices to Builders and Contractors.)	Chicago.	Philadelphia.
Boards: (*Ordinary dimensions.*)				
Pine, 1st quality, clear	65 00 @ 75 00	50 00 @ 60 00	46 00 @ 48 00	55 00 @ 60 00
" 2d quality	55 00 @ 60 00	42 00 @ 48 00	44 00 @ 46 00	40 00 @ 50 50
" 3d quality	18 00 @ 22 00	35 00 @ 40 00	43 00 @ 45 00	15 00 @ 30 00
Spruce	@ 25 00	13 90 @ 15 00	*Not sold.*	@ 35 00
Hemlock	ea. 17 @ 18	12 00 @ 13 00	@ 10 00	@ 14 00
Yellow pine	20 @ 40	25 00 @ 40 00	@ 28 00	20 00 @ 50 00
Cypress	@	32 00 @ 40 00	@	40 00 @ 45 00
Clapboards:				
Pine	@	33 00 @ 55 00	10 50 @ 22 00	20 00 @ 35 00
Spruce	@	23 00 @ 35 00	*Not sold.*	*Not Sold.*
Framing Timber:				
Pine			12 00 @ 17 00	28 00 @ 32 50
Spruce	13 50 @ 16 00	13 50 @ 15 00	*Not sold.*	20 00 @ 22 50
Hemlock	12 00 @ 15 00	@	10 50 @ 15 50	12 50 @ 13 50
Yellow pine	18 00 @ 25 00	25 00 @ 30 00		26 00 @ 28 00
Laths:				
Pine	@	2 25 @ 2 35	1 75 @	@ 3 00
Spruce	@ 2 40	2 25 @ 2 50	*Not sold.*	@ 2 75
Shingles:				
Pine, shaved ℔ M	5 00 @ 6 00	@	*Not sold.*	
Pine, sawed "	4 00 @ 5 00	@ 4 50	2 40 @ 2 60	
Spruce, sawed "	1 50 @ 2 00	1 50 @ 2 00	*Not sold.*	
Redwood ℔ 125	1 40 @ 1 60	3 75 @ 4 50	5 50 @ 8 00	30″ $10 @ 28
Cedar, split ℔ M	@	@	*Not sold.*	24″ 8 @ 21
Cedar, sawed "	@	2 00 @ 4 00	2 25 @ 2 35	20″ 5 50 @ 14
Cypress. Split....7 x 24. "	18 00 @ 20 00	5 50 @ 6 00	4 00 @ 4 50	13 00 @ 20 00
Miscellaneous:				
Piles ℔ ft.	4½ @ 5½	Piles 6c. ℔ ft.	*Not sold.*	
Fence pickets, Spruce	8 00 @ 10 00	10 00 @ 18 00	Pine, 8 @ 21 00	12 00 @ 14 00
Cedar posts, ℔ ft. (sq. posts.)	@	25 @ 35	9 00 @ 21 00	70 @ 1 25
Chestnut "	@	25 @ 35	*Not sold.*	28 @ 36
Finishing Woods: ℔ M. (*First Qual. Kiln-dried.*)				
Ash	@ 55 00	38 00 @ 48 00	35 00 @ 40 00	35 00 @ 50 00
Cherry	80 00 @ 120 00	60 00 @ 100 00	80 00 @ 100 00	75 00 @ 120 00
Chestnut	@ 55 00	38 00 @ 50 00	45 00 @ 50 00	40 00 @ 50 00
Butternut	40 00 @ 60 00	60 00 @ 70 00	50 00 @ 60 00	67 50 @ 75 00
Mahogany, Baywood [Mexican]	@ 180 00	150 00 @ 160 00	150 00 @ 180 00	150 00 @ 250 00
" St. Domingo	@ 350 00	120 00 @ 350 00	250 00 @ 300 00	200 00 @ 300 00
Maple	45 00 @ 50 00	45 00 @ 60 00	30 00 @ 35 00	27 50 @ 55 00
Oak, red	@ 70 00	@ 50 00	35 00 @ 40 00	35 00 @ 45 00
" white	@ 70 00	50 00 @ 55 00	35 00 @ 40 00	40 50 @ 50 00
" quartered	@ 90 00	65 00 @ 70 00	45 00 @ 50 00	57 50 @ 67 50
Sycamore quartered		50 00 @ 65 00	40 00 @ 50 00	57 50 @ 67 50
Pine, clear	65 00 @ 70 00	30 00 @ 65 00	45 00 @ 50 00	@ 65 00
Redwood	60 00 @ 70 00	60 00 @ 70 00	56 00 @ 65 00	72 50 @ 75 00
Rosewood ℔ lb	@ 6		@ 7	
Walnut, black	125 00 @ 150 00	85 00 @ 120 00	80 00 @ 100 00	90 00 @ 200 00
Whitewood	45 00 @ 50 00	38 00 @ 45 00	30 00 @ 35 00	25 00 @ 45 00
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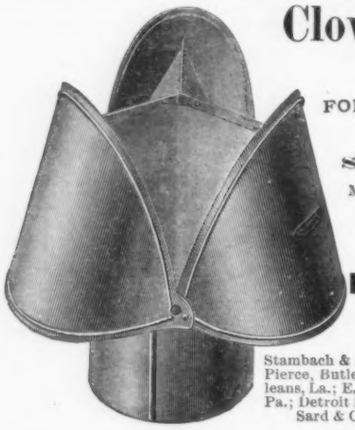

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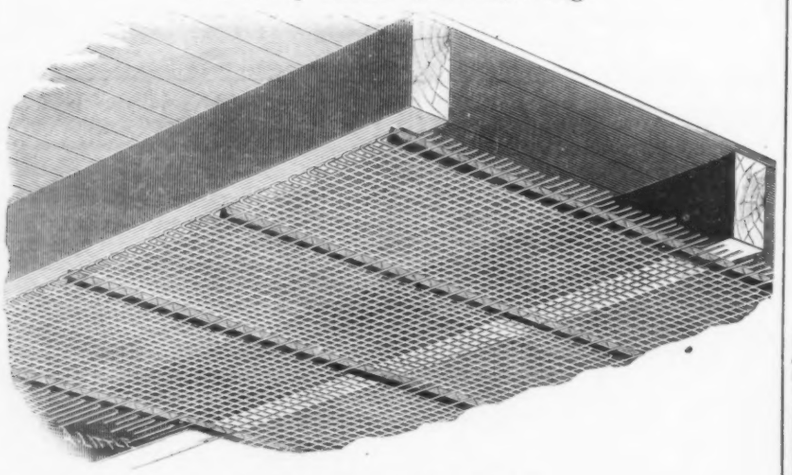

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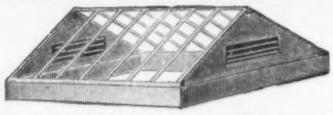

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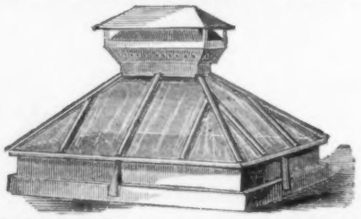

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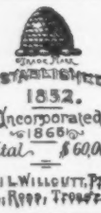

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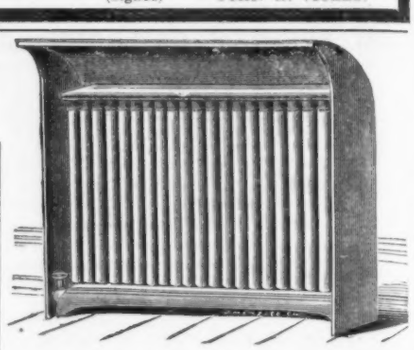

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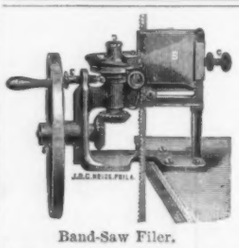

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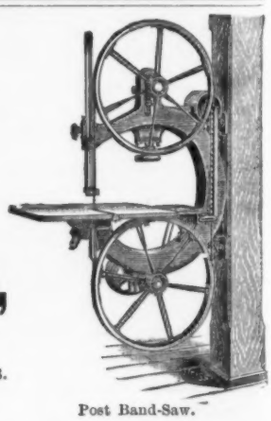

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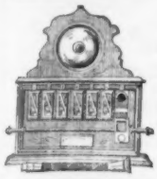

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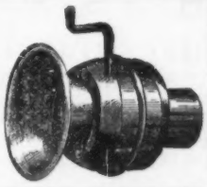

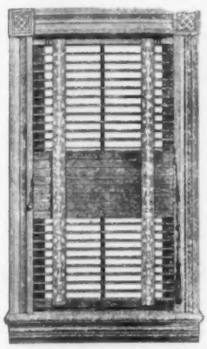

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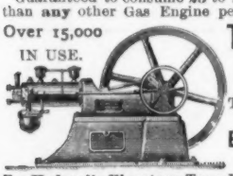

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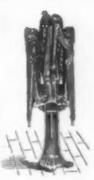

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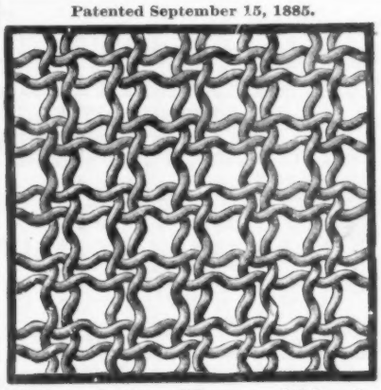

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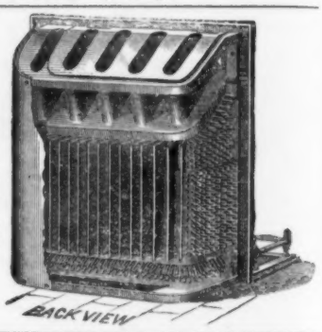

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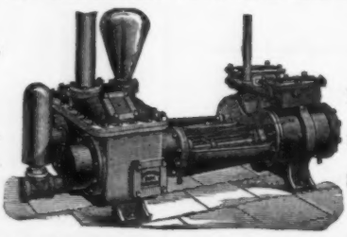

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MARCH 20, 1886.

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THE first accounts of the sinking of the steamer Oregon suggests reflections of considerable interest from a technical point of view. Leaving out of sight the question whether eight men, all on the lookout at once, ought not to have been able to give sufficient warning of danger to enable the steersman to avoid a collision, there is something extraordinary in the amount of damage inflicted by a comparatively slight blow, as well as in the complete crippling of the structure of the larger vessel which occurred either before or just after her submersion. According to the published descriptions of the accident, the vessel which struck the Oregon could not have been sailing at very great speed, for all accounts agree that the sea was smooth, and the officers say that there was a mist, which, in the absence of rain, implies a light wind; while the shock of the collision was so feeble that few of the passengers were awakened by it, and there is no sign of the spars having been shaken out of the smaller vessel. For all this, the first blow was sufficient to knock a hole nine feet square in the side of the Oregon, while the second blow, which must have been a comparatively feeble one, since it came only from the recoil and subsequent slight movement of the schooner, broke through the Oregon again, at the very point where her side should have been most thoroughly stiffened by the transverse bulkhead, tearing a hole which opened into two compartments at once. The captain of the Oregon is said to have had no idea of the extent of the injury for some time after the accident, and to have continued his course for New York, sending down men meanwhile to stop the holes with blankets and mattresses, and one could hardly have better authority than his for thinking that the normal result of such a collision should have been far less serious than the damage actually inflicted. We cannot help suspecting that something of the responsibility for the accident ought to be laid upon the steel plates, of which the vessel, like most of the newer and larger ones, was constructed. There is, in the use of structural steel, a temptation and a danger, which are now just beginning to be thoroughly understood. According to present ideas a steel plate, to replace with advantage the wrought-iron plates of the old-fashioned naval construction, should contain so slight a percentage of carbon as to be soft, almost inelastic, and incapable of hardening by dipping, when red-hot, in cold water. Steel plates of this kind are, except for the difference in the process of manufacture, practically about the same thing as those of wrought iron, showing similar softness, toughness and strength, and it seems incredible that plates so made, and well riveted together, should be dashed to pieces by a blow in the way that the side of the Oregon seemed to have been demolished. A trifling variation in the manufacture of the steel plates, however, gives them properties of a very different character. A few more pounds of carbon in a ton of metal will make the plates rolled from it far stronger, stiffer, and more elastic, and only less suitable for naval construction by reason of the brittleness which they acquire in the ratio of their gain in strength. For some purposes the gain in strength is of great importance, a ton of steel plates of this kind easily doing the work of perhaps three thousand pounds of iron or soft steel, and in shipbuilding, where every pound of metal saved in construction adds an equal amount to the profitable carrying capacity of the vessel, there is an obvious inducement to use the stronger, but thinner and more brittle plates. Whether Messrs. John Elder and Company, the builders of the Oregon, were in the least imprudent in this respect, we cannot, of course, say, and their reputation is good evidence that they would certainly have used the material which seemed at the time the best for the purpose; but the ideas of engineers in regard to mild steel have somewhat changed since the Oregon was built, and the disaster off Fire Island may have been the first severe test to which a steel ship has been subjected. That it showed an unexpected weakness seems to be evident, and it is much to be hoped that an investigation may be made which will bring out all the facts from which instruction for the future may be derived.

ONE account of the catastrophe contains an important indication of another kind. According to this story, two of the masts of the Oregon, as it sank, approached each other until they crossed, showing that the vessel broke in two in the middle as it went down. The water at the place of the accident is about one hundred and thirty feet deep, and the bottom is probably sandy, like the rest of the Long Island shore, so that there would seem to be nothing in the way of a lodgment on two rocks to explain the rupture, and we must perhaps look for the cause in the transverse strain due to the weight of the water in the middle compartments, resisted by the buoyancy of the compartments at the ends, which were still filled with air. This strain might easily amount to a load of one or two thousand tons, which, acting at the centre of a structure more than five hundred feet long, it would require great strength to resist. Such strength ought, of course, to be supplied, since a similar accident might happen to any vessel, but the need for it is not often so clearly shown. Most steamships are very strongly trussed to resist "hogging," or transverse rupture by the weight of the two ends in case the vessel should be left supported only in the middle, but bracing against a strain in the opposite direction would be less frequently needed, and is not perhaps so carefully attended to.

AMONG the circulars recently issued by the United States Bureau of Education is one containing an account of the principal technical schools abroad, by the late C. O. Thompson, once the noted Principal of the Worcester Free Institute, and later President of the Rose Polytechnic Institute at Terre Haute, Ind., which contains much information of value to those interested in technical training. The point which first attracts the attention of the reader of the pamphlet is the change which has taken place in European schools in regard to the method of teaching such arts as those of engineering and architecture. A few years ago such things were taught as matters of science, in the great polytechnic schools of France and Germany, the courses in these schools consisting of lectures in every branch of the science of construction. The graduates of the schools went out into the world equipped with the Theory of Elasticity, the Method of Least Squares, Spherical Astronomy and Higher Geodesy, only to find that nobody had any use for them or their science. In 1881, there were in Germany one thousand graduates of the Polytechnic schools who could not find situations, and one manager of a large engineering establishment is said to have put up in the window of his office a card, inscribed "No Polytechnic man need apply."

A LITTLE before this time the Russian Government had established two engineering schools, one at Moscow and the other at St. Petersburg, on a new plan, under which each student was obliged to spend a large proportion of his time in what has now become familiar to our teachers as "shop-work;" which, in the courses of mechanical engineering.

consisting in the practice of forging, casting, drilling, filing, fitting, pattern-making and assembling of parts of machines. This innovation in technical instruction met with a success which soon attracted notice among civilized nations. While only two thousand students attended the German Polytechnic schools, which were arranged to accommodate six thousand, and out of those who did go, only a portion found their services in demand after their graduation, the Russian schools were well filled, and their graduates were profitably employed as soon as they were ready to go out into the world. The attention of all who cared for technical education was soon fixed upon St. Petersburg and Moscow, where they saw not only lecture-rooms for the teaching of theory, but great workshops, where, in the mechanical engineering department of the St. Petersburg school alone, several tons of iron were cast every day by the students, steel was made in a Bessemer converter, and wrought-iron produced by puddling processes carried on at a considerable scale. In the department of applied chemistry in the same school they saw a distillery capable of producing a thousand gallons of alcohol a day; soda works with a capacity of a thousand pounds a day, and a dye-house supervised by the best dyer in Russia, where a hundred pounds a day of cotton, silk and woollen goods were handled under the direction of the students, who were obliged to take charge in turn of each of these model establishments. Returning to the engineering department, they found the materials produced in the shops utilized in various ways, one of the bridges across the Neva, for instance, having been entirely constructed under the direction of the engineering department of the Polytechnic school, out of iron tested, if not made, in the school premises. At Moscow, where the system of shop-work is somewhat different, although the proportion of the students' time devoted to it is about the same, an immense amount of machinery is made in the school workshops and sold, the sales of engines, lathes, drilling-machines, and tools of various kinds amounting to more than thirty thousand dollars a year.

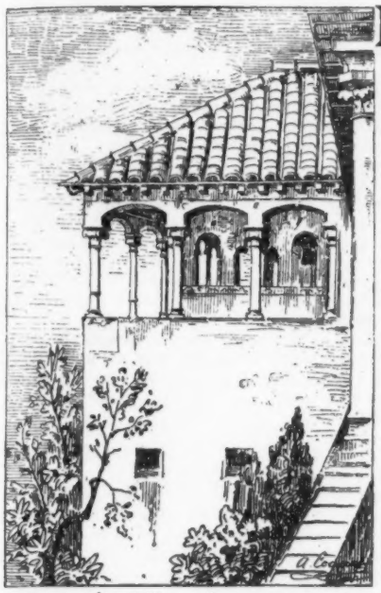
SEEING these things, the people in other parts of the world who care for the happiness and usefulness of their fellow-citizens began to inquire whether, after all, the training of hand and eye, and the business-like habits, fostered by the Russian schools, where the students not only poured the melted iron into the moulds, and stirred the dyes in the vats, but bought the materials, tested them, and rendered strict accounts of their use of them to their professors, were not of value, independent of the scientific attainments of the pupils, and experimental schools, managed on a similar basis, were established in all civilized countries, including our own. In the Continental countries it was desirable to avoid competing with the great public Polytechnic schools already existing, the teaching in which probably costs more than in any other schools or colleges in the world, and the shop-work schools were established at first under the name of Foremen schools, with the object of training pupils to become expert machinists, foundry-men, carpenters, builders, dyers, weavers and so on. The success of these schools was extraordinary. In most of them the course, measured by our ideas, was very severe, the French ones, for instance, requiring six-and-three-quarters hours' shop-work and six hours of other school-work per day from each pupil, but the graduates found their services in such demand that their future was practically assured from the moment that they left the school with their certificate of faithful application in their hands. To most parents, who have had to work hard for their own living, and are anxious about the success in life of their children, this consideration is of very great importance, and instruction in shop-work has naturally become extremely popular all over Europe. Already one of the larger schools, the Higher Technical School at Chemnitz, has been raised to an official rank equal with a Polytechnic school, and instruction in small handicrafts is now given in many primary schools, while the city of Paris has in process of construction an immense group of buildings expressly for training young children in the manual arts which will best qualify them to become skilful workmen and workwomen hereafter.

HIS Highness the Hereditary Prince of Monaco, who is a scientific man of distinction, recently read before the Paris Geographical Society a paper upon the Gulf Stream, which we find reported in *Le Génie Civil*, and which is well calculated to upset the notions which have hitherto flourished here in regard to that mysterious current. To say nothing of the superstitions prevalent in New York, where a warm day in winter is accounted for by saying that the Gulf Stream has set in toward the harbor, while a cold season is laid to the diversion of the stream from its normal course, it has been generally supposed and taught that the Gulf Stream, issuing from the Gulf of Mexico, flowed with considerable rapidity in a north-easterly direction, passing Cape Cod at a distance of sixty or seventy miles, and striking out then into the open Atlantic, which it was supposed to traverse with a speed slowly diminishing, until a portion of it reached the south-western coast of Great Britain, passing thence to the Baltic, while the remainder, leaving the main body somewhere in mid-ocean, bathed the Azores, and lost itself on the African coast. A convincing proof of the correctness of this description was supposed to be found in the fact that the western, or rather the south-western coast of England, is remarkable for its mild climate, palms, orange trees, eucalyptus and many other sub-tropical plants flourishing there in the open air, while cocoanuts and similar products of warm countries are said to be occasionally cast upon the beach.

REASONABLE as this theory appears in the light of the facts, the investigations of the prince seem to show that it is erroneous. Instead of bathing with its beneficent waters the coasts of Northern Europe as far as Spitzbergen, as is generally supposed, the Gulf Stream, to use his words, does not cross the parallel of forty degrees north latitude, unless perhaps very slightly, until it reaches the Azores, and the warm water which produces the balmy climate of Cornwall and Devonshire is a superficial layer, which, carried probably by the wind, moves in a course parallel to the equator, more than five hundred miles distant from the nearest edge of the real Gulf Stream. There is some reason to think that a part of the warm water may come from the Gulf Stream, as an undefined eddy has been discovered on the northern edge of the latter, but the principal current is proved, by bottles set afloat in it, to move, after it reaches the middle of the Atlantic, in a direction rather southerly or southeasterly than in one which would bring it to the British Islands. Its influence upon the latter must, therefore, be confined to the tempering of the prevailing southwesterly winds, and as these are the rainy winds, every shower probably brings to refresh the English and Irish coasts some drops evaporated from the warm belt which crosses the ocean far to the southward.

WE trust we have not outraged the feelings of any of the many subscribers who have lately said pleasant things of our past endeavors, by printing extracts from their notes in the form of endorsements — so dear to the maker of proprietary medicines. We have taken this, with us, unusual course just now because we recognize that men like to have an opinion suggested for their adoption as much as sheep like to see the old bell-wether make the first skip over the wall; and as there certainly seem to be many who think our journal something more than merely tolerable, it may confirm others in the suspicion they have vaguely entertained, that it is good enough to be better, and that the best way to make it better is to aid actively in the work, when occasion offers. It is too soon for us to say whether the Imperial edition will be worthy of the very handsome support it has already received, but it may be well to advise those who may be disposed to grumble, that the difference between this and the other editions is cumulative, and the question whether it is worth what is paid for it should wait unasked till the end of the year. This matter of money's worth suggests the thought that it may be worth while to point out that the cost of little things, insignificant in themselves, when taken in bulk is enough to account for our not giving more for the money than we do. Thus, for instance, the increase of half-a-cent a pound in paper, or a change in the postal laws, might annihilate our present small profits on the subscriptions, or, to take a less conspicuous item, the steps we now take to mail this edition flat cost us about fifty cents more per subscriber than the old way. This means for the full list a gross sum of such magnitude that we could probably make a considerable saving by buying back from our subscribers at the end of the year the straw-board sheets in which the copies are mailed.

THE REPORT OF THE MASSACHUSETTS DRAINAGE COMMISSION.—I.



From the Alhambra, Granada.
(Bloc. Com. Soc. Archits. Paris.)

IN 1884, in pursuance of a resolve of the Legislature, the Governor of Massachusetts appointed Messrs. Adams, Stebbins, Converse, Hayden and Tuckerman a commission to investigate conditions affecting the purity of certain rivers of the State and to suggest remedial measures. The commission employed Mr. Eliot C. Clarke as its chief engineer, and Messrs. Joseph P. Davis and Rudolph Hering as consulting engineers. It has recently issued an official report of two hundred and forty-three pages, giving the result of its labors.

The assumption is made at the outset that the rivers in question are seriously polluted by sewage and by manufacturing waste, the degree of pollution in the case of different rivers being duly considered. It is also assumed that the best way to get rid of sewage, when it can safely be adopted, is to discharge it into a large body of fresh water. It is assumed that this is not practicable in the case of the rivers in question.

One of the conclusions reached was that, owing to the impossibility of discharging the sewage directly into streams without first purifying it, it is necessary to exclude storm-water from it entirely. The commissioners say: —

"We do not provide for surface drainage. Situated as we were, it was found to involve a scale of cost which seemed to us entirely inadmissible. It may answer very well when sewage flows freely away into large bodies of water, but if it requires pumping, treating or handling in any form, the accession of rainfall swells the discharge at times to utterly unmanageable proportions and in any aspect is very costly and cumbrous. We think that the figures which we have to present will be sufficiently imposing without one dollar of needless expenditure. In our view the treatment of street scour as sewage is a luxury rather than a necessity of municipal life, and it seems to us that most of our towns and cities find that their necessities will probably absorb all the funds which they are quite ready to spare."

The prevention of the pollution of streams by the waste of manufacturing establishments is properly regarded as only incidental to the chief purpose of this commission, which is to prevent access of foul or of partially purified sewage to streams from which water is taken for domestic use. This element of the problem is divided into three parts: 1. Relating to towns of which the sewage may be delivered through a common sewer to one common area for purification. 2. Relating to towns of which the sewage may be delivered by a common carrier into the present main outfall system of the City of Boston. 3. Relating to towns of which the sewage must be treated independently, each by itself, or in small groups.

The largest example of the first method is the system proposed for the Mystic River valley. This is to take the sewage of the whole or a portion of Stoneham, Woburn, Winchester, Medford, Belmont, Arlington, Cambridge, Somerville, Melrose, Malden, Everett, Chelsea and Revere, by a sewer which at its lower end is five feet in diameter, with an inclination of 1 to 2,500. This sewer is to deliver at a pumping-station near Pines River in Saugus, where there is a tract of more than 1,000 acres, which may be made available for its treatment. The sewage is to be pumped on to this land and filtered through it, the effluent being discharged a little below the level of half-tide, reaching the sea through Pines River.

The cost of this scheme is estimated at $1,520,000, the interest on the cost of construction at three per cent being $45,600 and the annual charge for maintenance being $20,000. This combined yearly charge is apportioned between the different towns in various amounts ranging from $449.85, in the case of Somerville, to $16,522.44, in the case of Chelsea.

The largest example of the second method is that of the lower Charles River valley for the disposal of the sewage of Waltham, Newton, Watertown, Brighton, Charlestown, Somerville, Cambridge, Brookline, and part of Boston proper. The main sewer of this system has at its lower end a diameter of six feet six inches and an inclination of 1 to 2,800. It delivers into the Boston main sewer at Huntington and Camden streets. Its cost is estimated at $1,561,000, with a yearly charge for maintenance of $12,000 and for interest of $46,830. To this is to be added an annual payment of the City of Boston for outfall and pumping of $29,650. These costs — in all $88,480 — are apportioned at rates varying from $1,265.06 for a part of Boston proper, to $26,288.21 in the case of Cambridge.

A characteristic example of the third method is to be found in the case of Westborough, where it is recommended to construct a main sewer of fifteen-inch pipe with an inclination of 1 to 1,500 crossing a divide in Park Street by an excavation about twenty-one feet deep and running westerly to a gravelly knoll of about fifteen acres extent, the highest point of which is about seventeen feet above the general level of the adjoining meadow. It is proposed to grade this down by the removal of 33,000 cubic yards of gravel, establishing a level area of ten acres about six feet above the elevation of spring freshets. This land is to be divided into four separate beds to which sewage can be delivered alternately. The cost of the scheme is $45,210. The charge for interest at three per cent would be $1,356.30. No estimate for the cost of maintenance is given. It is proposed that the City of Boston shall contribute $15,000 toward the execution of the work.

The total cost of all the improvements proposed is $3,771,381, on which the yearly interest at three per cent would be $113,141.43.

Concerning those districts which cannot be drained to the Boston main outfall it is assumed that the only admissible process for purification is what is known as intermittent filteration.

Chemical treatment is discarded because of its inefficiency and excessive cost. Broad irrigation or "sewage farming" is discarded because of the large area required and because of the objection to the undertaking of farming operations by a municipality. The commission expresses its objection to chemical treatment as follows:

"It is also the general opinion that chemical processes in their best form will have some effect in removing noxious matter in solution, but all agree that a considerable amount must be left in the effluent. This, however, may be safely discharged into a running stream, if its proportion to the supply of pure water does not exceed five per cent. But we have still to deal with the precipitate — about fifty grains, we will say, to the gallon. It is very offensive, and not valuable. By subjecting the sludge to methods of pressure, however, most of the water has been expressed without offense, and its weight reduced to about one ton to one hundred and sixty-five thousand gallons of sewage. It is possible that some market-value might attach to this residuum in some localities, but we dare not count upon anything better than gratuitous removal. Finally, the cost of the operation in England is estimated to be just about one shilling per head, or say, twenty-five cents for each person yearly. This does not include interest on the capital invested in the works, land, and so on. By itself, therefore, it does not appear to be financially attractive."

[The cost in England would have to be doubled in calculations for this country.]

Of irrigation it is said that when it is especially favored by circumstances it is the best method, but that it is seldom that these circumstances can be controlled to advantage. The process is thus described:

"By this process, the sewage being conducted to land prepared for the purpose, is suffered to flow over it and be taken up in part by the crops raised upon it. In short, it is an attempt to extract the element of value from the sewage by using it as a fertilizer in farming. The noxious and offensive elements are thus either beneficially appropriated by crops, or are detained in the soil by mechanical filtration, or by long and repeated exposure to the air are decomposed, oxidized, and changed into harmless matters, so that the water which runs off is comparatively pure. More than one hundred towns in England employ this system, and it proves eminently satisfactory where conditions favor its adoption. Its great drawback is the vast area of land required for its successful operation on a large scale. It is stated, for example, in our engineer's report, that Boston would require a farm about as large as the entire township of Brookline, if it wished to realize the whole farming value of its sewage. The best English authorities estimate that one acre of land must be set aside for each one hundred persons. When it is remembered that this land must all be tolerably level and fairly dry, some appreciation is reached of the obstacle which this incident presents to the general adoption of this system. There are subsidiary difficulties which will naturally occur to all. It suggests alarming possibilities of farming on a large scale, by municipal corporations. This prospect may well damp the enthusiasm of many who would eagerly welcome such a solution of the sewage problem, if sufficient private farming enterprise were available upon tracts of land convenient and adapted to the purpose. . . . Dry or wet, night and day, summer and winter, the same quantity must be taken, or if there be any variation, it is likely to be most when the crop needs it least. And it is this obligation which we fancy would dismay our farmers. But in the absence of such a private demand, it is difficult to see how the work can be carried out without the direct intervention of the municipality. . . .

"In fine, we believe this system to be admirable, if only a number of somewhat intractable conditions, some of which we have indicated, can be controlled. Where all things can be made to work together in harmony, it offers a reasonable probability of at least reducing the expense of getting rid of sewage to a minimum. Where an arrangement can be made to operate it in combination with filtration, so that private agriculturists may take the sewage in such quantities, and at such times, as they may find best for their crops, and, when not desired, can turn it upon filter-beds, we think there would be a fair prospect of attaining the largest measure of utilization with the least possible complication and expense."

The method finally selected for recommendation is what is called in England "Intermittent Downward Filteration." The advantages

of this system are so well stated in the report that it would be impossible to improve on the instructive text:

"Intermittent filtration, pure and simple, is the converse of irrigation. The latter is the minimum quantity of sewage applied to the maximum area of land, and permits utilization, as well as purification, to the greatest degree. The former is the application of the maximum quantity of sewage upon the minimum area of land. It permits of only partial utilization, but, in our opinion, of more perfect purification.[1] It frankly abandons all dreams of profit; and in so doing it gets rid of the two greatest drawbacks to the system of irrigation. Having no crop to consider, much less land will suffice, as it is found that the ground will filter ten times as much sewage as any crop upon it can profitably absorb. Having no farming ventures at stake, we are relieved of all the machinery of trade and difficulties of management. Purification, not profit, is the paramount idea. Not that it is impossible, in certain cases, to combine some profitable use with this primary intention, but if so, it is a purely secondary consideration. This system is, in effect, nothing but turning certain tracts of suitable land, by skilful preparation, into monstrous filters. There is, properly, no attempt to save any matters held in suspension or solution in the sewage. The object is to get clear of them utterly, whether they be good or bad, precious or worthless, and restore the water to its first estate, pure and undefiled, as it bubbled from the spring. And this wonderful transformation is constantly asserted to be brought about by a faithful application of the filtration process. Its advocates maintain that sewage, passed through ten feet of prepared earth, is good enough for any purpose, and they claim it to be nature's process, and intimate that, after all, it is a mere question of a little more or less remoteness, and every drop of water on earth to-day was sewage not long ago. However that may be, it is sufficient for the present purpose to say that, if properly managed, it does afford a practicable, economical and efficient means of cleansing sewage. The objections to it are five-fold. It is charged to be wasteful, in that it feeds no crop. There is a dread, lest so much sewage on so little land should cause offense, especially in midsummer. Doubters are confident that the land must eventually clog. And finally, it is thought that the cost of the preparation of the land will be excessive, or that the carelessness to be bargained for with ordinary management on a large scale, would render its success utterly problematical. The final arbiter of all such questionings is experience, and that infallible test has decided that these fears are, for the most part, groundless. . . .

"We have, then, no hesitation in recommending the adoption of this system, where, for any reason, broad irrigation is impracticable or undesirable and the ocean unattainable, and we think it likely to prove always a valuable auxiliary, in combination with irrigation, where the surroundings admit of its introduction."

The Commission says, at another point: —

"It almost seems as if earth, at a touch, took every baleful element out of sewage. We wish to emphasize this immunity from all essential pollution to air or water in the neighborhood of such lands, because it is probable that such an apprehension may be aroused at the outset, and it is possible that such baseless fears may be instrumental in prejudicing a feature of the scheme which seems to us to offer a singularly fortunate escape from a very perplexing dilemma."

However, when it comes to its recommendations it does not trust the touch of earth to destroy the baleful element. It says, in connection with Waltham, that filtration might be objected to on the score of danger from the returning effluent to the water supplies of Waltham and Watertown. Again, it says: "Any sewage field which might be fixed upon should not even filter in the direction of streams which supply water for drinking." In the case of Marlborough, it is proposed to spend about $22,000 for the sake of reaching remote ground, more than would be required "to reach another equally acceptable were it not for the fact that the effluent from the nearer of the two might affect the Boston water-supply." It recommends that "In Westborough as in Marlborough some additional expense should be faced rather than to run the risk of mixing the results of a possibly imperfect filtration with the drinking-water of any community."

This consideration is never lost sight of by the commission nor by its engineers, and upon it are based most of the recommendations made with reference to all those parts of the district which cannot drain to the Boston outfall.

The general theory on which the recommendations are based may fairly be formulated thus:

1. Unless where access to tide-water can be given in an unobjectionable manner, the sewage must be purified before it enters any stream.

2. Purification by chemical means would not be complete and would cost too much.

3 Broad irrigation when properly controlled secures a perfect effluent and an agricultural advantage, but it would take too much land and would involve the undertaking of farming operations by municipalities. If not always properly regulated it might result in the discharge of crude sewage over the surface into the stream.

4. Intermittent filtration is not subject to these disadvantages, it may be supplemented by irrigation to any desired extent, and its result is perfectly satisfactory.

5. However, to make assurance doubly sure, to avoid an infraction of the statute requiring sewage to be kept out of streams used as sources of domestic supply, and to see that no unrecognized and unsuspected "virulent poison from a previous sewage pollution" shall enter the water-supply rivers, even intermittent filtration areas must, wherever possible, be moved over beyond the edges of the water-shed and made to drain into some stream not now under the ban of the statute.

6. As the protected water-shed is so large, as the towns are so thick and growing so fast, it is not wise to attempt the purification of their effluent near at hand. So far as possible their sewage should flow into trunk lines and be carried to remote points, as to the Saugus Plain.

7. As the sewage will have to be carried through a costly main sewer, pumped at its point of destination and filtered through earth, everything except sewage must be kept out of it. The luxury of treating other waters would be too expensive.

This formula has been adhered to as closely, as carefully, and as consistently as the nature of things would allow. All of its details have been worked out with indefatigable pains and with great skill and at much cost. If we accept the formula as correct, sufficient, well founded and controlling, no question can be raised from any side as to the satisfactory and conclusive character of the work done.

There is perhaps a point of view from which some details of the scheme, details enormously affecting its completeness and its efficiency, take a somewhat different aspect.

First of all, it is not pleasant to give up our reliance on the good old motto "*Divide et Impera*," which has so long been the watchword of the sanitarian. It has generally been supposed that the more closely the details of cleansing work come under the control and are made to impose their burden upon those producing the waste, the more economical and the more complete might be the result. Under the scheme proposed, it would be at least a matter of indifference to the people of Winchester, for example, whether they sent much or little sewage for transportation through the main sewer, and to be pumped for purification in Saugus; so it would be a matter of indifference to the people of Waltham and Watertown whether they contributed much or little of the flow to be delivered through the Boston main and pumped at the outfall station. This consideration might seriously affect the magnitude of the problem. Again, there is nothing more rare than a tight sewer, and in many of the towns to be drained the sewers pass through saturated subsoil. That is, they would act as underdrains, and the amount of subsoil water contributed, greater in some places than in others, would, probably, at certain seasons — and these the worst seasons for purification — amount to a very important factor. Then too, it is very well to say that these outlets are provided only for a separate system of sewerage throughout the whole district to be relieved; but who is to regulate this and how exactly will it be regulated? It would be easy, no doubt, to prevent the connection of surface openings in the streets. It would not be easy — at all events for those who control the general system — to police the many towns connected so frequently and so thoroughly as would be necessary to prevent the clandestine discharge of roof and yard water through house-drains, and an enormous volume from this source would come to flood the purification-field at the time when it would — from rain falling directly upon it — be least able to receive sewage.

These considerations suggest a difficulty of great magnitude. It is found in England that where the "separate" system is used there is a very great increase of flow during rain-storms, and from underground drainage after rains. Bailey Denton says, with reference to Great Malvern: "The sewage proper, measured by the water-supply, amounts to 150,000 gallons a day, but in looking to the dilution due to subsoil water which raises it to 350,000 gallons a day, etc." In Abingdon, the sewage discharged in dry weather amounts to 200,000 gallons "increased to double that quantity in wet weather, the excess being due to the fact that the private sewers communicating with the public sewers in the town receive the rain run off the back roofs and impervious surfaces connected with the house."

Therefore, in regulating the scale on which these works are to be constructed, attention must be given not alone to present and future population, but to the increase of subsoil water leaking into the sewers and of roof and yard water clandestinely introduced into them — a very uncertain element of the calculation. However great it may be, an addition must be made to it to provide for the infiltration of soil water *en route*, especially after the main sewer dips below the permanent water-table of the ground. All this foreign water introduced into the sewers becomes foul water and must be treated at the same cost with the much smaller volume of actual domestic sewage provided for.

[To be continued.]

[1] This opinion is not well founded.

Mengoon, Burmah. — A few miles from Mandalay is the town of Mengoon, which is celebrated for its huge ruin of solid brickwork, formerly intended for a gigantic pagoda, but which was left unfinished in consequence of a prediction that its completion would be fatal to the royal founder, King Mentaragyi. The earthquake of 1839 split the huge cube of solid brickwork and reduced it to ruins. Yule gives the dimensions of the lowest of the five encircling terraces as 400 feet square. If completed, the edifice would have been 500 feet high. Not far from the gigantic ruin is the "great bell of Nungoon," cast at the commencement of this century, and in shape and form resembling Western bells. Its height is 18 feet, besides 7 feet for hanging apparatus; it is 17 feet in diameter, and from 10 to 12 inches in thickness, while its total weight is supposed to exceed 200,000 pounds. — *Springfield Republican.*

ART IN PHŒNICIA AND CYPRUS.[1]—I.

TWO installments of Messrs. Perrot & Chipiez's great history of ancient art have already been reviewed in these columns — those which dealt respectively with the art of Egypt and with the art of Babylonia and Assyria. A third installment is now before us, its English dress supplied by the same competent hand to which from the first we have been indebted. As its subject is merely the art of Phœnicia, and of its independencies and offshoots, it may seem a little strange that the book should be as voluminous as either of its predecessors.

Certainly, if the intrinsic interest of existing relics were the only point in question, a small fraction of the space required for Egypt or for Mesopotamia might have sufficed our authors. Neither in the quantity nor in the quality of such relics does Phœnicia even remotely rival the great nations of the farther South and farther East. But the present work is a *history* of art, and not a mere commentary on existing works of art. And to the historian's eye Phœnicia wears a very different aspect than the one she wears to the eye of the art-lover, pure and simple. The historian must take account not only of technical processes and visible concrete results, but also of origins and influences and all shaping causes. What may once have existed, but has now disappeared, may be of equal value in his thought with the most perfectly preserved specimens that still are to be seen. And how and why an art developed, how and why it was moulded by arts which went before, how and why it moulded those which came later upon the stage — these are the most vitally important points. And as the centre of our author's complicated and extensive scheme is avowedly the art of Greece — is an explanation of its roots and its nourishment as well as of its final, completest flowers — the art of Phœnicia gains a right to far fuller consideration than its own intrinsic merits at all could warrant.

Not that Phœnicia herself or any of the lands or cities which owed to her the whole or the greater part of their civilization, had the same sort of influence upon Greek art as had the art of Egypt or of Mesopotamia. These countries originated the elements which the Greek artists worked into shapes apparently so different and certainly so much more beautiful and complete that their origin was long forgotten or ignored; while Phœnicia originated nothing. "In a true sense of the word," M. Perrot explains, "we can hardly say that Phœnicia had a national art. She built much and she sculptured much, so we cannot say she had no art at all; but if we attempt to define it, it eludes us. Like an unstable chemical compound it dissolves into its elements, and we recognize one as Egyptian, another as Assyrian, and yet another, in later years, as purely Greek. The only thing that the Phœnicians can claim as their own is the recipe, so to speak, for the mixture. We may point, besides, to certain special arrangements suggested by special wants, such as those which have to do with the construction of fortified enclosures and the arrangements of harbors; and to a few singularities of style which are to be explained by the peculiar properties of the materials used. But these are only matters of detail. Looking at it as a whole, one is tempted to conclude that the sole originality of Phœnician art lies in its want of that quality."

M. Perrot then goes on to explain that with industry, as distinct from pure art, the case stands otherwise. To this point we shall return later on; but what we must first understand is why, if it had no original art, Phœnicia has so strong a claim upon the historian in whose eyes all ancient art is but one great whole with the art of Greece as its culminating blossom. It is because though the Phœnician was no originater, he was the great transmitter of original and diverse ideas; because if he did not directly influence the art of Greece, he conveyed to her those Egyptian and Assyrian influences without which her development must have been far other than it was — might never have been a development of anything like equal power and brilliancy. Indeed, more than this is true. It was not only the *art* of the South and East which the Phœnicians took to the barbarious shores of Greece; it was the whole *civilization* of the South and East — it was the knowledge of wealth and luxury and intellectual life; it was the impulse to rise out of barbarism and to develop hitherto unappreciated powers in each and every direction. Without contact with the outer world no such development would have been possible, and except for the help of the Phœnician mariner it is hard to see how such contact could have been brought about. If it would be too much to say that without his help Greece never would have been civilized, it is by no means too much to say that without it she would certainly not have been civilized when she was nor as she was. And the possibilities of loss to the world which lie in such a supposition bring with them such a rush of gratitude toward the Phœnician trader that we forget his own lack of intrinsic, artistic interest and gladly acknowledge his right to the prominent place which our authors have accorded him in the great gallery of ancient artistic history. And when I said that he brought nothing of his own to Greece, I forgot for a moment one thing which he did bring and which was indisputably his own — that priceless engine of civilization which we call the alphabet. He has left us no poetry, no philosophy, no history of his own; but he invented and bestowed the instrument by means of which Homer and Herodotus tell us of him, and by means of which the poetry, the philosophy and the history which tell of the Greeks themselves were rendered possible and were transmitted to the later world for its perpetual delighting and, no less, for the perpetual shaping and developing of its mind and heart. Not as an artist in any branch, I repeat, but yet as the great transmitter and unconscious foster-father of art does the dim, prosaic, money-making figure of the Phœnician mariner claim our attention and command our utmost gratitude.

From all of this it will perhaps be guessed that these present volumes, while of the greatest historical interest and importance, have far less artistic interests and charm than had either of their predecessors. A mere glance at their illustrations will prove as much. Few, indeed, are the pictured objects which can rivalin the remotest way those forms of beauty and of strength that were portrayed in the earlier books. Yet most of them are extremely curious and extremely instructive, while quite as much can be said for every page of the text. And text and pictures alike have the essential charm of novelty; for with the exception of its Cypriote phase Phœnician art is a subject which, until this book was published, could only be studied in volumes which, like the great work of M. Renan, are inaccessible to the general public.

Perhaps I need hardly say, then, in arrangement the book is as clear, and in treatment as sensible and as charming as the earlier volumes. It begins with the same general summaries as to origin, physical conditions, religion, writing, etc.; speaks then of architecture in general and of its different branches in detail; next of sculpture; then of Cyprus and Cypriote art; of gems; of painting; and finally, at considerable length, of those industrial arts in which, as has been hinted, the Phœnician race produced results of greater originality and intrinsic interest than in the nobler branches.

We need not pause, I think, over the origin of the race — a matter still in dispute among authorities — further than to say that M. Perrot grants it that Semitic birth, which is proclaimed by affinities of language, but which seems to be thrown in doubt by the essential unlikeness of their religion to the Hebrew. Certainly, if analogies of character and history go for anything in the way of proof, the unlearned observer will hardly doubt a close relationship in blood between the Jew and the Phœnician. Strange and striking indeed are the parallels which might be drawn between the Phœnician in antiquity and the Jew in modern times; each a trader by nature and a traveller; each a dweller in every known land, and a controller of its commercial activity; but neither anywhere at home, anywhere at one with the native population; each always and everywhere an alien in language, in religion, in tastes and feelings, and aims and life. I cannot do better than quote, just here, one of the concluding paragraphs from the book before me: "Seeing how great their services were to the civilization of Greece and Rome, and how admirable were those virtues of industry, activity and splendid courage that they brought to their work, how is it that the classic writers speak of the Phœnicians with so little sympathy? And why does the modern historian, in spite of his breadth and freedom from bias, find it difficult to treat them even with justice? It is because, in spite of their long relations with them, the peoples of Greece and Italy never learned really to know the Phœnicians or to understand their language; and, to answer the second question, because our modern historians are hardly better informed. Between Greece and Rome, on the one hand, and Phœnicia and Carthage on the other, there was a barrier which was never beaten down. They traded and they fought, but they never concluded a lasting and cordial peace; they made no effort to comprehend each other's nature, but retained their mutual, ignorant antipathy to the very end. In later ages, when all races were welded into apparent unity under the hand of Rome, the same antagonism was manifested in a different way. It was to a Semitic people that the world owed a new literature and a new religion; but from the very day that the Bible conquered its final supremacy, the West began again to hate and persecute the Shemite. Between the two races there has been from the beginning of things both constant and fertile communication and perpetual misunderstanding. They have never been able to let each other alone, and they have never agreed."

"That full justice has never been done the Phœnicians," M. Perrot continues, "is partly their own fault. They were moved neither by the passion for truth nor by that for beauty. They cared only for gain. . . . Tyre and Sidon acquired prodigious wealth; the minds of their people were exclusively occupied with the useful; they were thinking always of the immediate profit to themselves in every transaction; and to such a people the world readily denies justice, to say nothing of indulgence." Indeed, I may add, to such a people the world cannot do justice, for it cannot know them. Unless a nation transmits itself to posterity, how can posterity be acquainted with it? And the sole and only transmitting power is *art* — art either in its literary or in one of its plastic forms. Mr. Matthew Arnold was not the first to tell us how all our civilization may be traced back to the Greek on the one hand, and to the Hebrew on the other, the former having dowered us with beauty in its widest sense, and the latter with righteousness, with truth. But, however great the Hebrew's passion for truth, it could never have been transmitted to us, we could never have credited him with it

[1] *History of Art in Phœnicia and its Dependencies.* From the French of George Perrot and Charles Chipiez. Translated and edited by Walter Armstrong. In two volumes, illus rated. London, Chapman & Hall, Limited. New York, A. C. Armstrong & Son. 1885.

could never have granted him "justice, much less indulgence," had he not been possessed of an almost unrivalled literary gift — had his love of righteousness not been embalmed forever in the pages of a magnificent literature of prose and verse. The Phœnician, as our author says, was as devoid of the passion for truth of his Hebrew cousin, as of the passion for beauty of the alien Greek. But even had he possessed it, it would have profited him little (I mean, of course, as regards our estimation of his qualities), unless the Hebrew gift for literary art had been given him as well. There are lessons here for us, I think, which we may well ponder with attention. And if it be objected that there was one great nation of antiquity which was not markedly artistic, and yet which shaped the world anew and conspicuously moulds our modern world to-day, let me explain that I am speaking of things purely intellectual and spiritual, and not of things practical and political; let me note, too, that Rome was not so inartistic by nature as was Phœnicia, and that she absorbed and re-edited a large portion of the art of Greece, turning it to her own new uses, and expressing by it much of her own individual life; and then let us remember that Rome, greatly as we respect her memory, commands respect, abstract admiration, rather than such affection as we give to Greece and to Judea; has a far less vital place in our conscience, in our intellectual life, in our emotions; supplies us neither with our "sweetness and light," nor with our "rules of conduct." These things, which were transmitted to us from the Greeks and the Hebrews, are the most important things of all — the most intimate, the most influential, the most precious. These will subsist, and will persist, with an influence ever new and ever freshly potent, as long as civilization of any kind remains — yes, even though a time should come when Rome herself will be forgotten. Even so there will never come a time — unless, I say, our civilization perishes utterly from off the earth — when the passion for truth which marked the Hebrew, when the passion for beauty which marked the Greek, will fail of its shaping, controlling, inspiring, delighting power. And each passion alike was recorded by the hand of art, has worked upon us, and will work upon our latest children's children, through the perennial power and charm which art, and art alone, possesses.

M. G. van Rensselaer.

The Illustrations

[Contributors are requested to send with their drawings full and adequate descriptions of the buildings, including a statement of cost.]

The Hall Mansion, Harlem, N. Y. Sketched by Mr. C. W. Stoughton, New York, N. Y.

This venerable and unique landmark of Harlem stands a little west of Fifth Avenue between One Hundred and Thirty-first and One Hundred and Thirty-second Streets, facing north and south, being consequently diagonally disposed to the avenue. In 1825, Charles Henry Hall, of England, purchased the Furman Farm of forty acres, with the old farm-house standing in its centre, and proceeded to secure the adjoining farms until his estate comprised two hundred acres, extending from Third to Eighth Avenue. He enlarged and remodelled the homestead, giving it its present form. A small army of workmen appeared, and all the resources of landscape gardening were employed on the farm, transforming it into a spacious park, from Mount Morris (One Hundred and Twentieth Street) to the shores of Harlem River. Artificial lakes were formed of fresh and of salt water, and stocked with fish; the finest cattle roamed over the pasture land, and everything that money could procure for beautifying the park was provided. A transverse road from Third to Eighth Avenue was cut through by Mr. Hall, paved and lined with trees — forming the present One Hundred and Twenty-ninth Street. From the verandas of the house one might look southward over the wide gardens and intervening meadows to the village of Yorkville, two miles below; eastward across Randall's Island to the Sound, and then following the course of Harlem River from the old Gouverneur Morris house of Morrisania Manor on the Broux hills, to the northern highlands, where stands the Jumel House on the cliffs of Washington Heights. When all the proprietor's improvements were completed, his hospitality knew no bounds. Every one was admitted to enjoy the beauties of the park, while at the mansion balls and dinner-parties followed each other in quick succession; and all was animation and gaiety, with "life at the breaking crest:" night after night the lights burned late, and the spacious halls and rooms re-echoed the sounds of merriment, as had those of the Colonial houses, its older neighbors, which now, like it are falling to decay. The season at the Hall mansion was brilliant, but short, for its prestige passed with the generation which saw it rise. Its public-spirited builder was overtaken by financial difficulties in the panic of '37, and saw the elegant estate divided, and passing into other hands. In 1840, the house itself was sold and its glory became a memory of the past The fate of such a building in the city is inevitable, and though it still stands bare and dilapidated, its removal is only a question of time.

House of G. N. Talbot, Esq., Brookline, Mass. Messrs. Bradlee, Wislow & Wetherell, Architects, Boston, Mass.

Unitarian Church and Alpha Delta Phi Chapter-House, Ann Arbor, Mich. Messrs. Donaldson & Meier, Architects, Detroit, Mich.

Both buildings are built in Ann Arbor, Mich., the cost of each having been about $15,000. They are both built of field stone gathered in the vicinity, broken and laid random range. In the Church, beside the audience-room are social rooms, Sabbath-school rooms, library, pastor's study (in second floor of tower), etc. In the Alpha Delta Phi House, basement and dining-room, kitchen, kitchen-pantry, stores, servants' quarters, fuel and boiler rooms, etc. In first story, parlor, library, smoking-room, reception-hall, matron's living-room and bed-room. Second floor, four suites (one-and-one-half bed-room and study), bath-rooms, closets, etc. Third floor, three suites and large chapter-room. Both buildings are finished neatly, though not extravagantly.

Library of Drew Theological Seminary, Madison, N. J. Mr. R. H. Robertson, Architect, New York, N. Y.

Sketches for Country-Houses. Messrs. Andrews & Jaques, Architects, Boston, Mass.

Rotch Travelling Scholarship Drawings. — Plates I, II, III, IV.

[Issued only with the Imperial edition.]

Although these sheets of drawings and sketches appear only in the "Imperial" edition, we have had so many inquiries as to the character of the task imposed on the contestants for this scholarship that we do not feel that subscribers to the other editions will object to our occupying a portion of their columns with the following programmes: —

A college founded by the United States Government to train boys for positions in the Government civil service.

This college is to bear the same relation to the civil service that West Point Academy does to the military service, and the Annapolis Academy to the naval service of the Government.

The institution is supposed to be situated in the City of Boston, on a level site, facing south on a new park, and having a frontage of not over 600 feet; on either side of the lot a street will extend to the north, and as much land in this direction can be occupied as may be desirable.

While expressing the purposes and the immediate uses of the structure, the design should have a monumental character, worthy of an important and permanent Government building.

The college will provide for 500 pupils. It is to include: —

Large hall for examinations and exhibitions, covering	10,000 sq. ft.
Reading-hall with book alcoves	5,000 " "
Gymnasium (with suitable outside recreation grounds)	5,000 " "
Refectory	5,000 " "
Kitchen, etc.	
General lavatories, etc.	
Coat-rooms, etc.	
Museum	10,000 " "
Physical laboratory	4,000 " "
Chemical laboratory	4,000 " "
Meteorological observatory	
Two lecture-rooms, each	6,000 " "
Twenty lecture-rooms, each	1,000 " "
Ten lecture-rooms, each	700 " "
Thirty instruction-rooms, near respective class-rooms, each	200 " "
Ample courts for light and air.	

A sketch is required of two elevations, two plans and one section, at a scale of 1-32 to a foot.

The rendered drawings are to consist of: — plan of each story; three elevations; one section; 1-8 scale. Portions of the façade at 1-2 scale.

The sketches are to be completed at 6 P. M., and left on the desks with an assumed name or motto on the corner of the sheets. They are to indicate as thoroughly as possible the *motif* or scheme the candidate proposes to follow, in plan and elevation.

Notice will be given on Monday, April 6, 1884, of the designs selected for the rest of the competition.

The finished drawings are to be handed in Friday, May 5, at 3 P. M. They must not depart from the original *motif* adopted in the sketch.

A monumental railway terminus fronting on an open square.

This structure should include, besides the Railway Station, ample accommodations for the administration, for freight and passenger service, for a hotel, and for all other conveniences which can add to the comfortable arrival and departure of travellers. The architecture of the façade should be as imposing and rich in detail as is befitting the grand entrance to a great city.

The square may be given a monumental character by porticos, statues, and such other decorative features as would suggest the wealth and importance of the city. This square and station might be designed for such a site as the Cambridgeport flats, facing the West Boston bridge, and the latter might legitimately be considered in the design of the square.

The problem is to be regarded as a design for the arrangement of the square, and the plan will include only such portions of the buildings as indicate the façade upon the square.

The length of the façade must not exceed 500 feet; the limit of the square in the other direction is not fixed.

The preliminary sketch of the façade is to be on the scale of 1-32 to a foot; the plan of the square at 1-64 scale.

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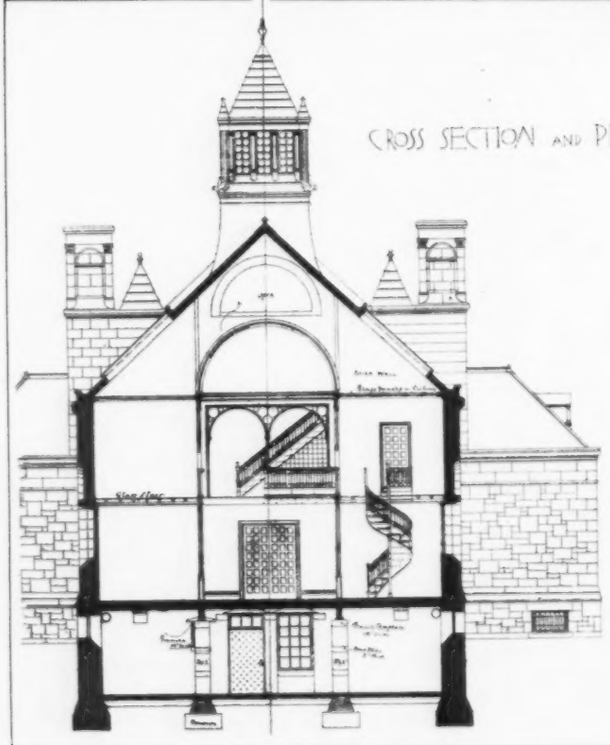
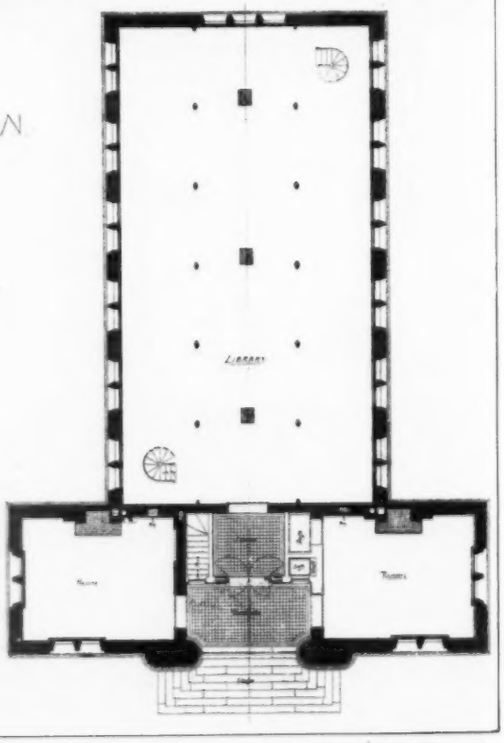
Library of the Drew Theological Seminary, Madison, N.J.

R.H. Robertson, Architect, N.Y.

CROSS SECTION AND PLAN





HELIOTYPE PRINTING CO. BOSTON

No. 534 American Architect and Building News, Mar. 20, 1886.

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The "Hall Mansion." New York.

Drawn by Charles W. Stoughton.

HELIOTYPE PRINTING CO. BOSTON

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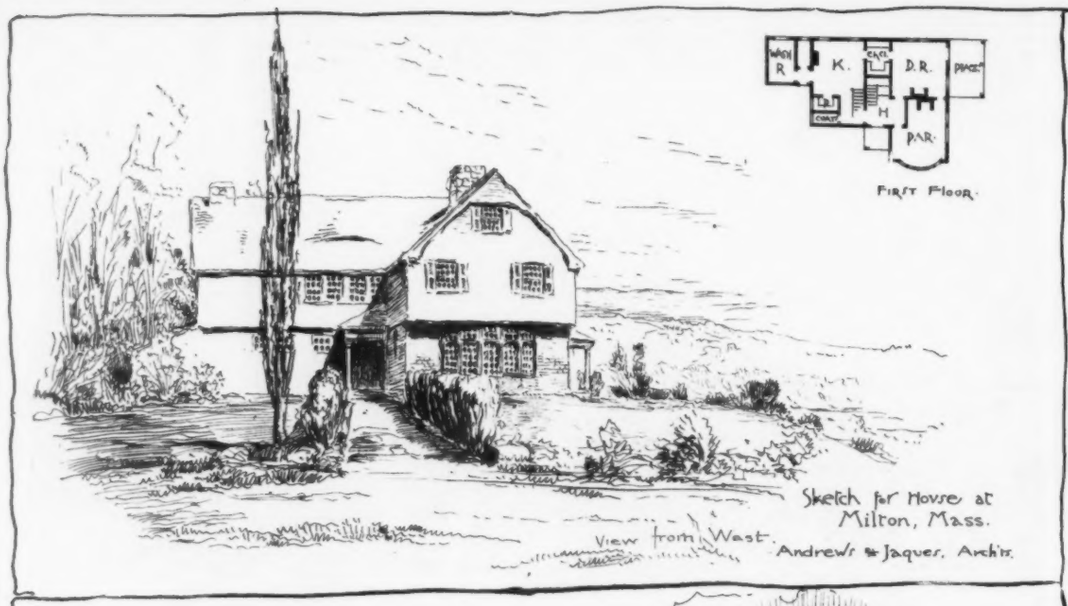


Sketch for House at Milton, Mass.

View from West. Andrews & Jaques, Arch'ts.

Living Room

Sketches of House at Chestnut Hill, Mass.

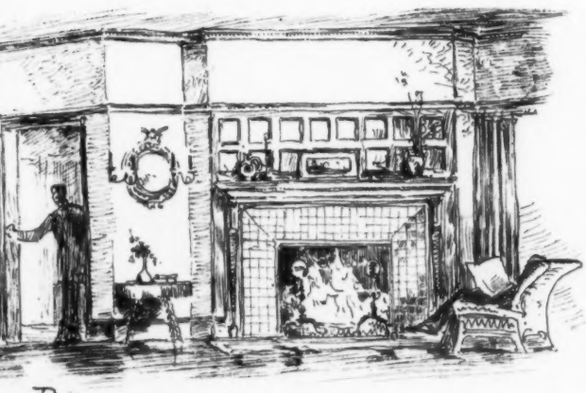
View f
South

Andrews & Jaques Archts.

S. TICKNOR & Co.

Sketches for a House for J. H. Sawyer. Esq. Chestnut Hill Mass

View from Northwest



ng Room

Entrance Hall.

View from Southeast.

Andrews & Jaques, Archts.
6 Beacon St. Boston. Mass.

The Heliotype Printing Co. Boston.

AMERICAN ARCHITECT AND BUILDING NEWS, MAR. 20 1886. No. 534.

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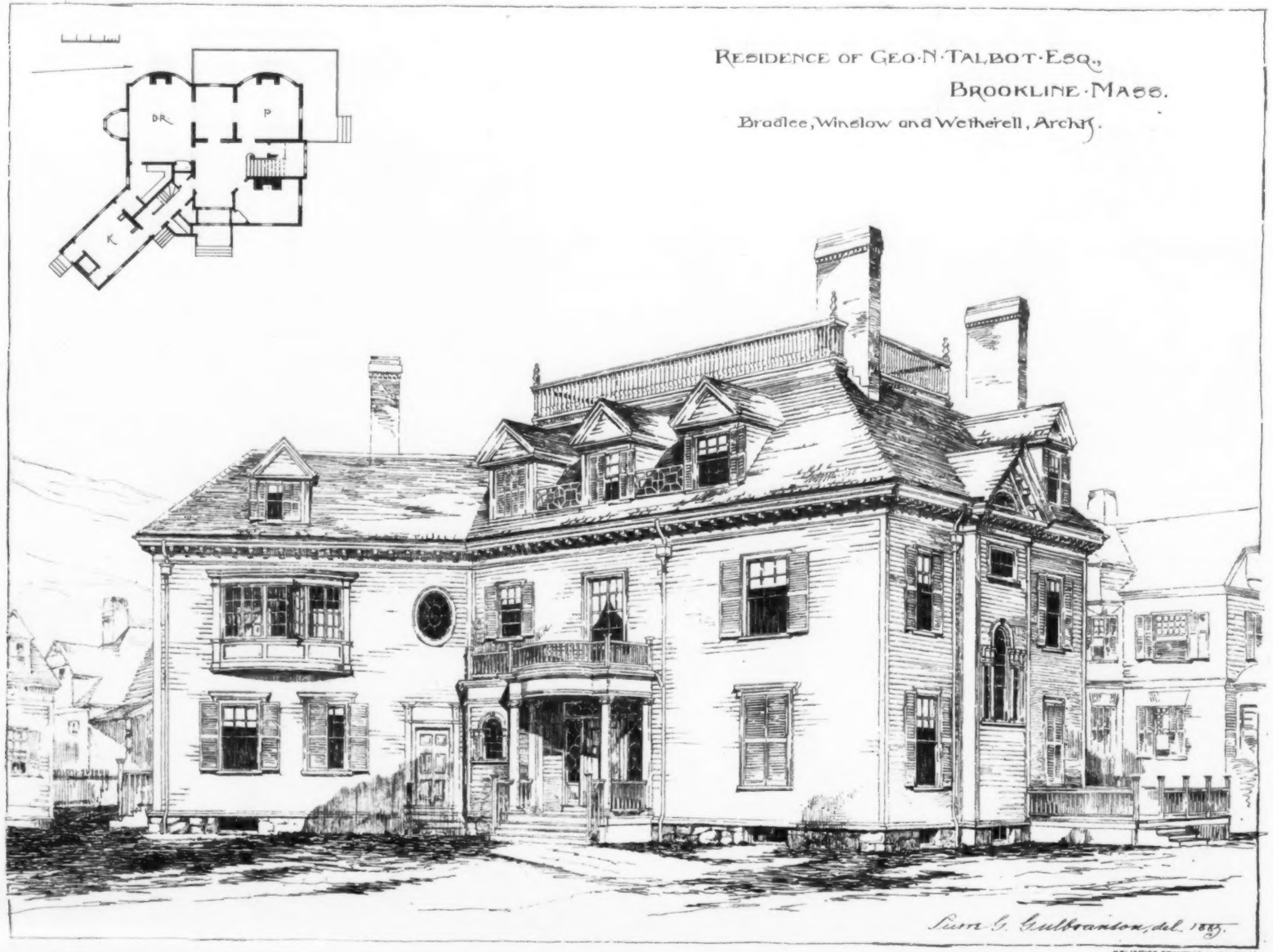

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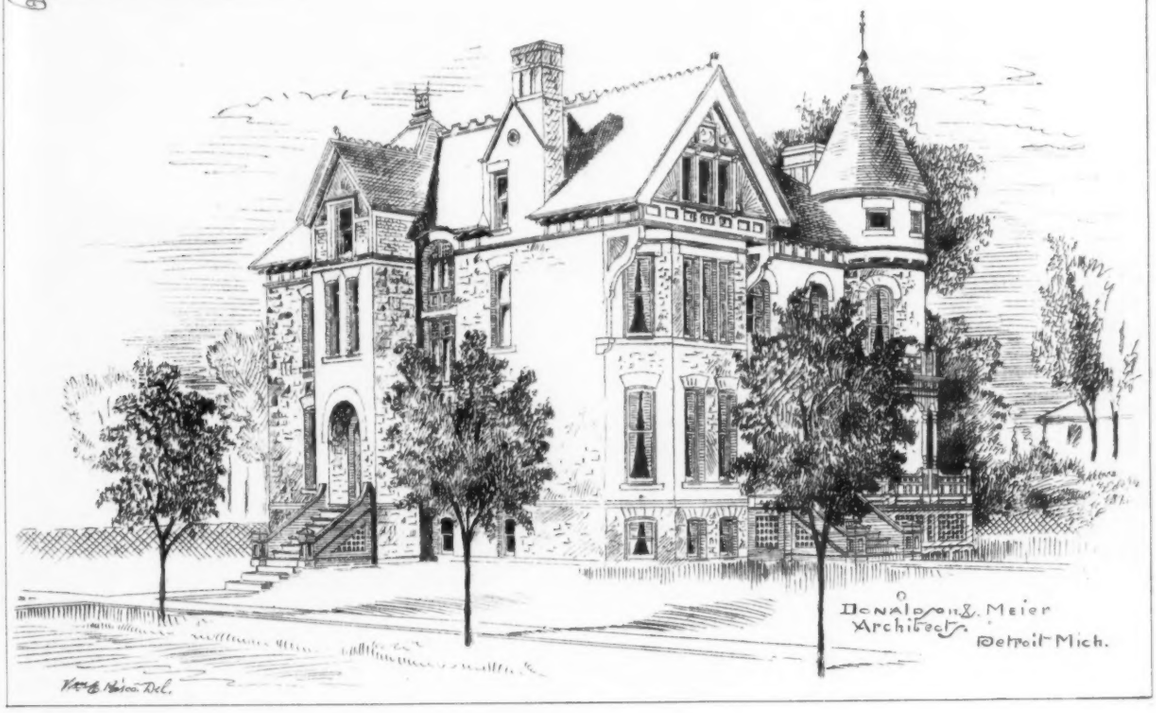
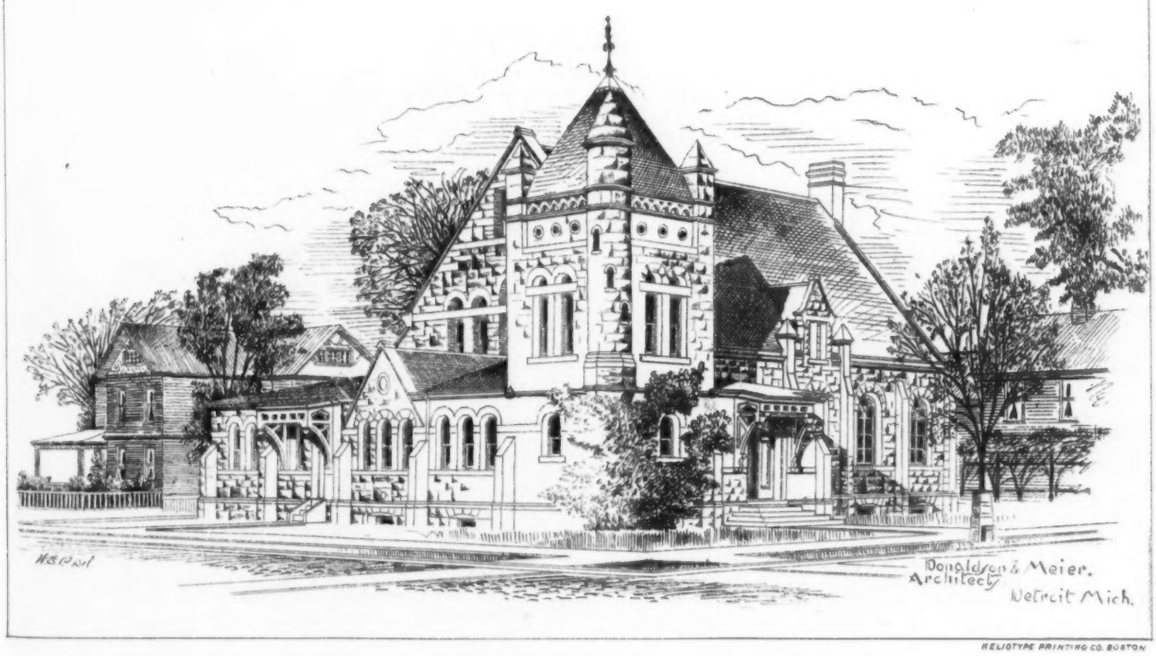
Alpha Delta Phi House.
Ann Harbor. Mich.



Unitarian Church.
Ann Harbor. Mich.



HELIOTYPE PRINTING CO. BOSTON

The rendered drawings required are:

A plan on a 1-16 scale; an elevation of the 500-foot façade washed with accurate shadows on a 1-8 scale; a perspective drawn in line, and not to exceed 14 by 18 inches.

The set of drawings must be accompanied by a thesis explaining the principles of architecture, historical and æsthetic, which governed the choice and development of the design.

The sketches are to be completed at 5 P. M. They are to indicate, as thoroughly as possible, the "motif" or scheme the candidate proposes to follow, in plan and elevation.

Notice will be given on Monday, April 6, 1885, which designs have been selected for the final competition.

The finished drawings are to be brought to the Museum on Saturday, April 18, at 4 P. M. Too great a departure from the features indicated in the sketch, will throw the finished set of drawings out of the competition.

MURAL PAINTING.[1]—VIII.

BYZANTINE FRESCO.

Seal from Mount Athos.

EVERYTHING that throws light on the evolution of mural paintings of bygone days is important. To know what were the agencies that caused one form of artistic expression rather than another, has a didactic value; and as the time-test is the only true test of the stability of pictorial processes, it is necessary that we should know just what these processes were, in order that we may be practically edified. On such grounds several lengthy extracts from the Manual of Denys will be justified. The discovery of this manuscript was fully chronicled in the last paper. Denys's Exordium is a beautiful and innocent orison to the Virgin:

"TO MARY,

"MOTHER OF GOD AND FOREVER VIRGIN.[2]

"O thou, who art as resplendent as the sun, much-beloved and all-gracious Mother of God, Mary! Saint Luke, source of eloquence, most learned physician, perfect master, and thoroughly versed in all the sciences and all knowledge, having been sanctified by the precepts of the Gospel—which he wrote and preached aloud—wished to declare to the whole world the very holy love he bore thy gracious and divine Majesty. He judged, and rightly, too, that from his stores of science and spiritual riches he could make thee no worthier offering than the representation of thy admirable beauty, so full of charm, which he had contemplated with his very eyes. That holy and learned personage employed all the resources of color and golden mosaic to paint and faithfully limn thy image in his pictures, according to the rules of his art. I, too, in my turn—feeble imitator—desired to follow in the footsteps of that holy man, and devoted myself to religious painting, hoping that my powers would be in no wise inferior to my good will, in order to fulfil my duty to thy sacred person, thy venerable majesty, and thy wonderful magnificence. But I confess that I deceived myself in this bold project, for neither my capacity nor my talents responded to my desires; nevertheless, I did not wish to abandon completely this fine scheme, nor to lose all the fruit of my labor; therefore I have dared to offer and place in thy hands, the explanation and interpretation of that art which I have acquired with the greatest care and most conscientious exactness, in order to form the very best method. For I am not unaware, O Virgin! that thou and the Creator of all things deign to accept everything that man can do; therefore I offer thee this work, which I have devoted to painters gifted by nature, to aid them in the beginnings of their art, and especially to indicate to them a good system. . . . Especially do I desire that thy dazzling and gracious image may be unceasingly reflected in the image of their souls, and may keep them pure to the end of all time; that it may raise the lowly, and encourage those who look upon and imitate that eternal model of beauty. May I, too, by the help of thy blessed virtues, obtain the happiness of beholding thee face to face!"

Then follows an exhortation to the profession, beginning thus:

"TO ALL PAINTERS,

"AND TO THOSE WHO, FOR THE LOVE OF KNOWLEDGE, MAY STUDY THIS BOOK.

"Knowing, O all ye disciples of laborious painters, that the Lord in his holy Gospel cursed him who buried his talent, saying unto him: 'Wicked and slothful servant, thou oughtest to have put my money to the exchange, in order that at my coming I should have received mine own with usury' I myself feared to incur this malediction."

And thus the exhortation concludes:

"I laboriously and carefully collected all this material, assisted by my pupil, Master Cyrillus, of Chio, who revised it most scrupulously. Pray, then, for us, all of you, that the Lord may deliver us from the fear of being condemned as wicked servants.

"The most unworthy of painters, DENYS,
Monk of Fourna d'Agrapha."

"SEVERAL PRELIMINARY EXERCISES AND INSTRUCTIONS

"FOR HIM WHO WISHES TO LEARN THE ART OF PAINTING.

"Whoever wishes to learn the science of painting, should begin by approaching it gradually, and by preparing himself for some time beforehand, drawing simply and without intermission, using no measure till he has acquired some experience and given proof of capacity. Then let him address to Jesus Christ the following prayer and supplication before an image of the Mother of God, the Virgin-conductress, whilst a priest blesses him: 'KING OF HEAVEN,' etc. . . . Then, having traced on his head the sign of the cross, let him say, with a loud voice: 'We pray the Lord—Lord Jesus Christ, our God! Thou who art endowed with a nature divine and limitless, . . . who hast illumined with thy Holy Spirit thy divine Apostle and Evangelist Luke, to the end that he might represent the beauty of thy most pure Mother, . . . thou, Divine Master of all that exists, enlighten and guide the soul, heart and mind of thy servant; so direct his hands that he may worthily and perfectly represent thy image, that of thy most blessed Mother, and those of all the saints; for the glory, joy and adornment of thy most Holy Church. Pardon the sins of those who may venerate these images. . . . Amen!"

"INITIATORY AND CONCLUSION.

"After the prayer, the pupil must learn with exactness the proportions and characters of figures; he must draw much; he must work unremittingly, and, with God's help, he will become skilful at the end of some time, as experience has demonstrated in the case of my own pupils. I have toiled with pleasure over this work, to the end that painters, my brothers in Jesus Christ, and all those who shall adopt this book, may labor for the glory of God. Let them pray to God for me. [Here is a note of warning to malevolent critics.] But if any wicked or envious one, should blame, in any way whatsoever, my disinterested enterprise, let him know that he will only wrong himself; for, as a certain author has said, envy is an evil thing, but, at least, it has one advantage: that it devours the eyes and the heart of its possessor. God knows that I composed this work only to be useful, so far as lay in my power, to whoever intends to consecrate himself to this art, and to give himself up to it with the love of a zealous disciple, and eager, above all things, to possess the precepts of this book. It is to him that I address, in all friendship, the following counsel: Know well, O studious pupil, that if you wish to devote yourself to this science of painting, you must find an able master, who will teach you in a short time, provided he directs you according to our instructions. But if you only meet with a master whose teaching and art are imperfect, try to do as we did, that is, seek some originals by the celebrated Manuel Panselinos.[3] Work from them a long while, exerting yourself till you have mastered the proportions and characters of this painter's figures. . . . It is not only Saint Luke who is blessed, but all those who represent and try to show forth the miracles, the holy portraits of the Lord, of the Mother of God and the other saints; for this art of painting is agreeable to God, and is well-viewed by him. Thus all who work with care and piety receive from heaven grace and benedictions. But let all those who only strive for the love of money, and who are neither painstaking nor pious, reflect well before they die: they should remember with fear the chastisement of him whom they imitate—of Judas, expiating his crime in the torments of hell-fire, from which we hope to be redeemed by the merits of the Mother of God, of Saint Luke the Apostle, and of all the saints. Amen."[4]

It is interesting to compare the Italian Cennino's [1437] exordium with that of Denys. The former is instinct with piety, but of a less slavish kind. There is in it a recognition of personal inspiration, and an artistic freedom unknown to the Byzantine. The quotations that follow are from Mrs. Merrifield's translation.

"Chapter 1. Here begins the book on the art, made and composed by Cennino da Colle, in the reverence of God, and of the Virgin Mary, and of St. Eustachius, and of St. Francis, and of St. John the Baptist, and of St. Anthony of Padua, and generally of all the saints of God, and in the reverence of Giotto, of Taddeo and of Agnolo, the master of Cennino, and for the utility, and good, and advantage of those who would obtain perfection in the arts."

"In the beginning the omnipotent God created the heaven and the earth, and, above all, animals and food; he created man and woman after his own image, endowing them with all the virtues. But Adam was tempted, and fell through the envy of Lucifer, who, with malice and subtlety, induced him to sin against the commandment of God (first Eve sinned, and then Adam); . . . Then Adam, knowing the sin he had committed, and being nobly endowed by God as the root and father of us all, discovered, by his wisdom and his necessities, how to live by his own manual exertions. And thus he began

[1] Continued from page 129, No. 533.
[2] Translated from Paul Durand's French version.
[3] There are no masters equal to those whose reputations have been consecrated by time. Without a knowledge of them no education is complete.
[4] The painter Macarios complained to Didron that the painters of Mt. Athos worked for money, and as quickly as possible; not as of yore, for piety's sake and with reflection.

by digging, and Eve by spinning. Then followed many necessary arts, different each from the other, and each more scientific than the other; for they could not all be equally so. Now, the most worthy is Science; after which comes an art derived from Science, and dependent on the operations of the hand, and this is called Painting, for which we must be endowed with imagination and skill, to discover things (concealed under the shade of nature), and form with the hand, and present to the sight, that which did not before appear to exist. And well does it deserve to be placed in the rank next to Science, and to be crowned by Poetry, and for this reason, that the poet, by the help of science, becomes worthy, and free, and able to compose and bind together or not at pleasure. So to the painter liberty is given to compose a figure, either upright or sitting, or half-man, half-horse, as he pleases, according to his fancy. I have therefore undertaken to adorn this principal science with some jewels, for the benefit of all those persons who feel inclined to learn the various methods, and who worthily and without bashfulness set themselves about it; devoting to the before-mentioned science what little knowledge God has given me, as an unworthy member and servant of the art of painting." . . .

"It is the stimulus of a noble mind which induces persons to study these arts, made pleasing to them by the love of nature. The intellect delights in invention, and it is nature alone, and the impulse of a great mind which attracts them, without the guidance of a master. The delight they take in these studies induces them to seek a master, and they gladly dispose themselves to obey him, being in servitude, that they may carry their art to perfection. There are some who follow the arts from poverty and necessity; but those who pursue them from love of the art and true nobleness of mind are to be commended above all others."[1]

THE PROCESS.

As the difference between the recipes of Denys and those of the modern Athonite painters is but slight and unimportant, and inasmuch as the former are at times somewhat obscure, and would be still more so were they not elucidated by the modern methods, I shall give Didron's account of what he saw on the staging in the Monastery of Esphigménon, supplementing it by a few excerpts from the manual.

"This, then, is the manner in which I saw a fresco painted . . . by Father Joasaph, his brother, a first pupil who was a deacon and prospective inheritor of the atelier, [a second pupil] and by two children from twelve to fifteen years."

"The porch of the church, or narthex, which was being painted at the time of our sojourn, had just been built. It was scaffolded to receive the frescos in the upper part of the vaults. Workmen, under the painter's direction, were preparing in the court-yard the lime for plastering the walls. As it is applied in two coats, there are two kinds of lime; the first, a kind of mortar, rather fine, is mixed with straw, chopped small, which gives it a yellowish color; cotton or flax is mixed with the second, which is less coarse in quality. The first coat is laid with the yellowish lime; it sticks to the wall better than the second. The second is white and fine, and, owing to the cotton, makes a pretty stiff paste; it is this coat that receives the painting."

"The workmen then bring the yellow lime, and lay a coat of it on the wall about one-fifth of an inch thick. Over this coat, several hours afterwards, a pellicle of fine white lime is spread. This second operation requires greater care than the first, and I saw Joasaph's brother, himself a painter, apply this second coat of lime. Three days are allowed for the evaporation of the humidity. If one should paint before the expiration of this time, the lime would soil the colors;[2] if after, the painting would not be solid, and would not penetrate the lime, which would be too hard, too dry to absorb the colors.[3] It is hardly necessary to state that the thermometric state of the atmosphere may curtail or protract the interval that must be allowed for the drying of the lime before beginning to paint."

"Before drawing, the master-painter smoothes the lime with a spatula; then by means of a string he determines the dimensions of his picture. In the field of this figure composition he measures with a compass the size of the different objects he wishes to represent. The compass that Father Joasaph used was merely a reed, bent double, split in the middle and controlled by a bit of wood that joined the legs and opened or shut them at will. One of the legs was pointed, the other was provided with a brush. It would be impossible to fashion a more simple, convenient and economical compass.

"The brush with which one of the legs is furnished is dipped in red; with this color the picture is delicately outlined. The compass is chiefly used for the nimbi, the heads, and the circular parts; the rest is drawn by the hand, provided only with a brush." In a little less than an hour Father Joasaph outlined a life-sized picture, representing Christ in the midst of his apostles, entirely from his head, and without a single alteration, as related in the preceding paper. He began with the figure of Christ. "First he did the head, then the rest of the body, always descending. Afterwards he drew the first apostle to the right, then the first to the left, then the second to the right, then the second to the left, and so on symmetrically for the rest. The painter sketched with his hand raised, so to speak, and without a mahl-stick; this instrument used by our painters, would indent the moist lime. But the hand, when it trembles or is fatigued, is rested on the wall itself."

The outlines of the figures are filled-in with black, relieved here and there with blue, but always in flat tints. This is done by an inferior painter who draws the draperies and ornaments on this ground. The nude parts are reserved for the master.[4] All the draperies are completed, and the nimbus is outlined, before the head, hands and feet are painted. The master then takes up the work and completes the head. He prepares the face with a blackish tint, and strengthens the outline with a still darker color. He paints two figures at a time, going ceaselessly from one to the other: a change that permits the absorption of the washes without loss of time. A preliminary wash modifies the black undertone, and other washes follow quickly, the last having more body. Now the painter takes advantage of the undertone for his shadows; now he puts on his high lights; now he colors the hair; here he reddens the lips, there the cheeks; then he colors the eyes, and so on to the end. The nimbus serves for a color-test. [It is not always easy to follow Didron in his details of the process. Being a layman he is at times obscure, but not in the essentials.] The two heads were finished in a trifle less than an hour. The same painter completed a "Conversion of St. Paul," a fresco 3x4 metres, containing twelve figures and three horses in five days. "This painting was not a *chef d'œuvre* assuredly, but it was better than those that cost our painters of the second class six or eight months' labor. I doubt even if our great painters charged with a religious composition could do more uniformly well; there would be higher qualities, but greater faults in their work than in the fresco of Mt. Athos." Prof. Franchi, of Siena, with all his Italian facility, devoted nearly three hours to a delicately-modelled head in fresco. Wilson says that Michael Angelo allowed an entire day for the heads in the Sistine Chapel, which were very carefully finished. Much less time means much less modelling. Didron does not state how much the Athonite painters modelled their figures; but from his notes and from sundry implications in the manual, I should infer that the colors were not merely laid on in flat tints—which were doubtless used at times with great effect — but that the lights were broadly blended into the shadows, and the features, hair and contours emphasized by a bold and obvious use of the line. Elaborate modelling was suppressed, as the short time required for painting two heads clearly proves.

The gold and silver for the nimbi and costumes are applied when the plaster is thoroughly dry. The picture is then enriched with the finest colors, "particularly with Venetian azure," and the ornaments that decorate the halos, stuffs, etc., are painted. The coarser colors which were used for the figures must be thoroughly dry, so as not to injure the more precious colors, nor the gold and silver. This last paragraph is a paraphrase of Didron's longer one. (For a weekly journal condensation is a necessity). In it the "*secco*" process, so grudgingly used by the Italians is recognizable; only Didron has omitted one important element, the *size*, which is always mixed with the colors for "*secco*" retouches. The "*Manual of Denys*," however, supplies the omission, for it gives explicit directions for the use of azure "*a secco*." "Take bran, wash and rinse it. Then let the water that has served for this purpose stand; afterwards boil it, and when it is cooked, you can mix it with the azure, and paint the grounds. Others maintain that to make a water sufficiently glutinous, the bran must be boiled for a very long time and then filtered. In either case, before using the azure, be sure that the wall is very dry." A special artist whose sole business it is to letter, writes the name of the personage on the field of the nimbus, or around it; and he traces on the scroll held by the figure the consecrated legend recommended by the Manual. When this is done "all is finished." Having summarily described the modern Athonite or Byzantine process of fresco, I shall conclude with a few supplementary extracts from the Manual, which will now be more readily comprehended, and with several observations, deductions and comparisons suggested by Didron's researches.

1. "*How to purify lime.* When you wish to paint on walls, choose good lime; let it be as fat as lard, and see that it contains no uncalcined stones. If it is poor and filled with such stones, make a trough of wood. Dig a pit of the necessary size, put the lime in the trough, and add water which must be stirred with a hoe [*crotchet*] till the lime appears to be thoroughly diluted. Pour this into a basket placed over the pit, which will arrest the stones. Then the milk of lime thus obtained must be let alone till it has coagulated and can be taken up with a shovel." [Further than this the Manual does not state how long the slaked lime should be kept].

2. "*How to mix lime with straw.* Take some of the purified lime and put it in a large trough. Choose fine straw without dust, mix it with the lime, stirring it with a mattock. If the lime is too thick, add water till it can be worked easily. Let it ferment two or three days, and you may then apply it."

3. "*How to mix lime with tow.* Choose the best lime you have prepared, put it in a small trough. Take tow well cleansed from all

[1] It would be interesting for further comparison, did space permit, to quote from the book of the Latin monk Theophilus, written probably in the early part of the eleventh century: "I, Theophilus, an humble priest, servant of the servants of God, unworthy of the name and profession of a monk, etc." He tells us that Greece was the painter of the world in his day, and France the glass-worker. He makes but one slight reference to the fresco: "Its use is rather advantageous upon a new wall for a green color." [*Diversarium Artium Schedula:* translated by Robert Hendrie. London, 1847.)

[2] The materials with which the lime is mixed might soil the colors. There is no reason why the lime should. Didron inexactly uses the same word, *chaux*, both for the lime itself and for the lime mixed with the straw or tow.

[3] In other words, the crust of carbonate of lime would have been formed.

[4] Hence the many inequalities of execution in large works.

bark and well crushed; twist as if to make a rope, and by means of a hatchet, chop it up as fine as you can; shake it well to allow the dirt to fall, and throw it into the trough, where you must mix it carefully with a shovel or mattock. You must take care to try and try again, till the lime does not crack on the wall. Let it ferment as you did the other, and you will thus have lime prepared with tow, to form the superficial coat" [on which the picture is painted].

It will be observed that Father Joasaph and his coadjutors substituted cotton or flax for tow.

4. "*How to plaster walls.* When you wish to paint a church you must begin with the highest and end with the lowest parts. . . . Then take water in a large vase, and throw it with a spoon against the wall to moisten it. . . . If the wall is brick, wet it five or six times, and give it a coat of lime, two fingers and more thick, that it may retain its humidity, and that you may profit by it. If the wall is stone, wet it only once or twice, and lay on much less lime, for the stone readily absorbs moisture, and does not dry. During the winter apply one coat in the evening, and a superficial one the following morning. In the fine season do whatever may be the most convenient, and having applied the last coat, level it well, let it acquire some consistence, then work."

5. *How to paint on walls.* The picture having been outlined, "polish the drapery [the plaster on which it is to be painted], and lay on an undertone. Try to finish very quickly what you have polished, for, should you delay, there would be formed on the surface a crust that would not absorb the colors. Work the face in the same way; draw the outline with a pointed bone, and put on the flesh-color as promptly as possible before the formation of a crust, as we have said before."

6. "*How to prepare the white for wall-painting.*[1] Take some very old lime, try it on your tongue; if it is neither bitter nor astringent, but insipid, like earth, then it is good. It is with this lime, well-selected and well-ground, that the white is prepared. If you cannot find such lime, take old plaster that has been painted, scrape off the colors entirely, and grind it on a marble slab; throw it into a vase full of water, allow it to precipitate, and strain it. You will obtain white by this method. If you cannot find such plaster, you must cook lime, spread, dry, and finally grind it. Always take care to try if it is bitter or astringent; for such must be rejected, as in that case the crust would be formed too quickly, which would greatly impede the work; if it is not bitter you can work without fear."

7. Though the *Manual* recommends a sort of palette, the modern Athonite painters use none. Each color is diluted in a cup or vase, and taken from it when needed with the same brush that has served for the other colors, having first been rinsed in water. The tints are tested on the field of the halos that are subsequently gilded. I have seen Japanese artists work in this way, without a palette; and, like the painters of Mt. Athos, they designed from imagination with great rapidity — and at times upside down — without auxiliary sketches or models.

8. From the foregoing description it will be seen that the Byzantine resembles the old Roman method in one important respect, wherein both differ from the Italian. According to Vitruvius the ancient plaster was laid over a dry rough-cast in six succeeding coats — the first three lime and sand, the last three lime and marble-dust — and well beaten while all were wet. Thus a compact mass was formed that would retain its moisture for several days and permit the painter to work leisurely. The average thickness of this plaster was about 2.7 inches. While the Byzantine plaster was very much thinner — the modern about one-quarter of an inch, the mediæval somewhat thicker — the moisture was retained by mixing straw with the first coat of lime, and, while this was still wet, by applying a second coat of lime and tow (or cotton or flax). Three days elapsed before the painting was begun. Both Roman and Byzantine surfaces were polished, an operation that retarded the setting of the plaster by presenting a greater obstacle to the penetration of the carbonic acid. The Italians allowed the rough-cast to dry thoroughly before the *intonaco* was applied. This was about one-tenth of an inch thick and applied in two coats of lime and sand. Sand accelerates the setting and hurries the painter, who must finish before the crust is formed. But this disadvantage of sand as compared with straw, or tow, is more than offset by its superior binding qualities. The Italians retarded the setting of the plaster as much as they could by washing the lime in water containing carbonic acid, thus ridding it of some of its causticity, but not enough to compromise the final induration of the plaster. They were obliged to work surely and promptly, but not hurridly. The Byzantines could work more leisurely; but from certain observations recorded by Bayet, I should judge that their paintings were less durable. The Roman method *seems* the best from all points of view, but we must content ourselves with this doubt-implying word.

I reluctantly finish this paper without further quoting from the *Manual* — there is so much of interest in it. The poor monk who, for seventy francs copied the manuscript, concludes his work with this prayer: —

"GLORY TO GOD."

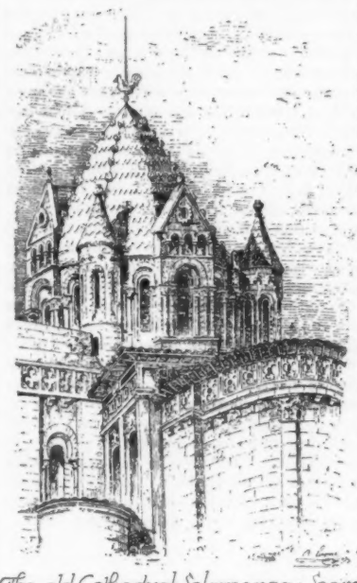
"Having finished, I said: Glory to thee, O Lord! And I said again: Glory to thee, O my Lord! And yet a third time I said: Glory to the God of the whole Universe!"

FREDERIC CROWNINSHIELD.

[To be continued.]

[1] White lead is not suitable for frescos.

ELECTRICAL LEGISLATION IN FRANCE.



The old Cathedral, Salamanca, Spain.
(Rep. Com. Soc. Archts. Paris.)

THE extraordinary development in industrial appliances, and their ever-growing introduction to domestic and private life, have led the administrations of various nations to pass into law many edicts, with the object of protecting life, property, and individual rights. Thus the use of steam is bounded by restrictive legislation under certain conditions, in several countries, on account of the inconveniences arising from the smoke of furnaces and the noise of machinery, and from the danger that may result from the explosion of boilers.

The employment of electricity has, till a few years since, been limited to the service of telegraphy, and to a comparatively small number of uses, for which only a feeble current is required. When the application of the electric-light became extended, and dynamos of high potential were introduced into practical use, some accidents, happily of rare occurrence, but striking on account of their novelty and suddenness, led the various electric companies urgently to consider what means should be taken to insure safety. In France the numerous and vexed discussions upon the electrical transmission of power, and especially the experiments at Creil, have caused the question to assume another phase.

Under the administration of M. Cochery, the Department of Posts and Telegraphs assumed the initiative in a project for regulating the installation of electric conductors intended for electrical transmission, either for lighting or other forms of energy. Two decrees, dated the 15th September, 1884, and the 12th May, 1885, established the principle of this legislation, and nominated the commission charged to elaborate it. This commission, as a matter of course, nominated a sub-commission and a reporter, and from the labors of the two groups emerged a legislative project which was recently published in several of the French technical papers, and this document has been very severely criticised in many quarters. The science of electricity is a new one; its most important uses are of very recent date, and they indicate large developments, possibly a revolution in the application of physical forces. For this reason it would seem that the time is badly chosen to hamper, with clumsy and inefficient legislation, the efforts of electricians and the enterprise of their clients, when freedom of action within reasonable limits is especially necessary. Although it may be fairly assumed that our fundamental knowledge of applied electricity is sound and well-defined, we have gone but little beyond in the development of this form of energy in its higher phases. But progress is still rapid, and conditions that appear unpractical or dangerous to-day may be relied upon for their usefulness and safety to-morrow. It should be remembered that only two or three years ago, an electro-motive force of two hundred volts appeared to be the limit of safety, whereas at the present time the Creil experiments, carried out under the control of a commission that includes several State engineers, involve the use of currents of several thousands of volts. Legislation of any kind must therefore be very imperfect, and consequently disastrous to the future of applied electricity. Certainly it would be possible to make such legislation progressive, and to modify it from time to time, according to the development of the science interfered with. There would, however, be but a slender chance of this being done, when it is remembered how tenacious of life in their original form State enactments are, and how often temporary measures become permanent.

It has been asked, and with reason, why the initiative of this scheme, and the control of applied electricity in France, has been entrusted to the Postal and Telegraph Department. The matter has, indeed, formed the subject of much lively discussion. The inspection of steam generators in France falls into the Department of the Ingenieurs des Mines, and, consequently, within the domain of the Ministry of Public Works. Now, as in nearly all cases the source of energy in electrical installations is steam, the latter department has urged, reasonably, that one part at least of nearly all electric installation should be under its surveillance. The Postal and Telegraph Department cannot with reason demand a control over the whole domain of electricity, because a special application falls within its province. The utmost it should be able to demand is a proper guaranty against the effects of induction on its own telegraph and telephone wires. But if the control were divided, the private user

would be probably in a worse plight, as he would have to obtain the necessary permits from several departments, and matters would not be improved by the transfer of authority from headquarters to provincial prefects, because those officials, though competent in law, would be incompetent in a practical sense, and they would be obliged to refer applications to headquarters, in order to obtain information on which to act. The misfortune is, that as the Commission has been set going, some result will almost certainly be arrived at. The selection as Minister of Posts and Telegraphs of a deputy from the extreme Left, M. Granet, may possibly afford a chance that the matter will be postponed indefinitely, and resumed some years hence, after our knowledge of the subject has greatly advanced, but it is to be feared that the appointment of M. Granet has come a little too late.

The draft of the measure contains fourteen articles, which it would be useless to reproduce *in extenso*, but the substance of the more important of them will be read with interest. The first article provides that every person who wishes to establish or maintain electric conductors shall apply for the authorization of the Minister of Posts and Telegraphs. Every one acquainted with the habits and customs of a department knows that from this point of departure the prospects look menacing, and realizes months of delay, of unsuccessful efforts, and of weary waiting in the ante-chamber of the minister. It should be mentioned that the draft does not specify, in any way, different types of conductors, overhead or underground, laid on or beneath the public streets, within houses, or in private property. It does not refer to any system of laying, but embraces the subject with the wide expression, "canalization of all kinds." Taking the text literally, no person could establish an electric installation of any sort in his house, whether for bells, telephone or lighting, without official permission.

The third article contains the forms of application, and specifies all points that petitioners must include, nature of steam generator, class of currents, potential at terminals, etc. — a long and exhaustive list. Clauses 4 to 9 relate to the conditions that must be complied with in electrical installations: dynamos placed in dry situations; conductors well exposed to view, thoroughly insulated where within reach; earth returns generally prohibited, etc. In each section of the circuit the diameter of the conductors must be proportioned to the strength of currents, in such a way that at no point any heating destructive to the insulation can take place. On the other hand, nothing is said about the maximum of electro-motive force that will be allowed.

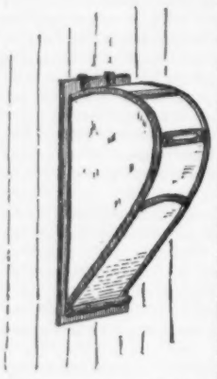
To maintain the execution and maintenance of these conditions, the measure provides for periodical visits of inspection by its agents, and reserves the right of withdrawing the authority already given, accompanied by all the unpleasant results of broken law — legal proceedings, costs, fines, and other consequences.

The programme certainly bears traces of a desire for the public interest and a regard for public safety. But however excellent may be the intentions of the Postal Minister, there is every reason to suppose that the mark he aims at will not be reached, but that, on the contrary, serious inconveniences to the public and delay in electrical progress will result. The Ministerial Commission is composed of eminent persons well versed in administrative questions, but, on the other hand, the industrial element, which would approach the subject in a practical spirit, is scarcely represented. We believe that the Syndical Chamber of Electricity, a body whose proper function it is to consider what can be most usefully done in the way of legislation, is seeking to participate in the counsels of the Commission.

The following curious incident serves to illustrate the foregoing remarks. Some months ago, an engineer, M. Sansoube, entered into negotiations with a little commune of Haute Savoie, la Roche sur Foron, for furnishing it with the electric-light. The work was completed quietly and without any demand for permission, and the circumstances related by M. Paul Giffard, who visited this little installation about a month ago, are interesting. "M. Sansoube," he said, "had the good sense to make no application, neither to the Minister nor to the Director of Telegraphs, although he laid the conductors on the public road. He completed the installation as rapidly as possible. But at the moment when the turbine that furnished the motive power was to be started, the superior telegraph authorities hastened from Chambery and from Grenoble. 'Stop,' they exclaimed; 'you have broken the law; you have acted without authority; an inquiry must be held; an action will be commenced.' But when they arrived at La Roche they found the installation at work, and, after some consideration, the Government officials gave their consent to established facts, certified that the conducting cable would act as a lightning-conductor for the whole town, since in period of flood it would be greatly immersed in the Foron; stated that the same conductor had no effect on the telegraph-wires adjacent; placed the telegraph and postal office of La Roche on the list of subscribers to M. Sansoube's electric-light system, and returned home." This incident is very instructive. It proves that industrials who carry out electric-light installations have greater interest than any one else to have their work perfect, and that to do this they must have a large liberty of action, and freedom from administrative fetters.

We have given so much space to this chapter in the history of electrical industry in France, first on account of its intrinsic interest, and second because although we are not fond in this country of legislative interference with industry, the question may still be an urgent one here, and the experience of France in the matter may prove of value. In England, however, it is probable that the common-sense conclusion will be acted on, that this science, being in its early youth, requires encouragement rather than restrictive measures. Some years hence, when perhaps the great problem of electrical transmission shall have been worked out in complete detail, legislation will be advisable, but in the mean time freedom of action within all reasonable limits is necessary. And of course this opinion is held equally in France, excepting in one or two official bureaus. — *Engineering.*

STEAM-PIPES AND HOT-AIR FLUES.



Japanese Wall-Lantern.[1]

In the course of a recent lecture by Dr. Tanner before the Louisville Board of Underwriters, the subject of fires caused by steam-pipes and hot-air flues was discussed at considerable length. In the course of his address, Dr. Tanner spoke as follows: —

"Mr. James Braidwood, who was for many years chief of the London Fire Brigade, made the startling statement, in 1846, that it was his belief that, 'by long exposure to heat not exceeding 212°, timber is brought into such a condition that it will fire without the application of light. The time during which this process will go on until it ends in spontaneous combustion is from eight to ten years, so that a fire might be hatching in a man's premises during the whole time of his lease without making any sign.' Among the many instances cited by Mr. Braidwood in support of this statement, is one to the effect that a fire in the Bank of England was traced to a stove which was resting on a cast-iron plate one inch thick, this in turn resting on concrete two-and-a-half inches thick, which was supported by wooden joists, the joists under the stove igniting. If this is a cause of fire, then the majority of houses heated by means of steam, hot-water and hot-air, are in constant danger of fire from spontaneous combustion, since the general impression prevails that the pipes and flues for heating can, with impunity, be placed in contact with timber.

"In examining this cause of fires the first question is, whether wood will char at as low a temperature as 212°. In tearing down houses for the purpose of rebuilding, the timber in contact with the heating-pipes and flues has often been found charred. Charcoal is made for certain purposes in the arts at 300°. As the result of experiments performed by myself in the laboratory, small pieces of white pine, heated a few hours in an air-bath at a temperature of 300°, were partially converted into charcoal. Considering these facts, it must be admitted the temperature of 212° is sufficient, if applied for a long time, to convert wood into a partially-burned charcoal. Accepting this as a fact, the next point to consider is the degree of heat at which charcoal will ignite. Made from the same wood at different temperatures, the products ignite accordingly, that is, if made at a low heat, it fires from a correspondingly low temperature. It has been determined experimentally that charcoal for making powder, when made at 500°, would fire spontaneously at 680°, and when wood has been carbonized at 260°, a temperature of 340° only was required for spontaneous ignition. Under certain circumstances, charcoal made at a temperature of 500° even will ignite when heated to 212°.

"So far the discussion of heating-pipes and flues as a cause of spontaneous fires has been upon the false idea that they are never heated beyond 212°. Under the ordinary pressure of the atmosphere, as when water is heated in the open air, it boils at 212°, but if it is heated under pressure, the boiling temperature increases accordingly; for instance, water boiling at a temperature of 212° is under a pressure of 147 pounds, equal to a column of water one inch square, and about thirty feet high; if the pressure is increased to two atmospheres, the temperature required will increase to 249°, and so on, so that, when a steam-gauge registers sixty, the actual pressure is seventy-five pounds, and the temperature at which the water is boiling as high as 307°. The higher the house, the greater must be the pressure, and hence the higher the temperature at which the water boils, and it follows that the pipes must heat hot accordingly, and it is stated that in some systems of water-heating the pipes have the water started through them at a temperature of 350°.[2]

"Then, where furnaces are used for heating, the temperature in a flue has been found to be 300°, at a distance of fifty feet from the fire. Couple these figures with those given in reference to the heat necessary to produce charcoal and cause its ignition, and it must be admitted that these pipes and flues for heating are responsible for many fires. The application of these facts is as follows: After long exposure, the wood in contact with the heating pipes and flues is changed on the surface to charcoal. During the warm season this charred surface absorbs moisture from the air; then in the fall comes a cold spell and heat is turned on, when the moisture is driven from the pores of the charcoal, leaving it in a

[1] From Prof. Morse's "*Japanese Homes.*"

[2] By the system of low-pressure steam-heating, which is far the most generally used, the pressure is only from five to seven pounds above that of the atmosphere, with a corresponding temperature of 228° to 236° Fahrenheit.

condition to readily absorb gases. The cold abates and the heat is lowered; fresh air in abundance then passes into the confined spaces where the pipes are generally placed, rapid absorption of oxygen from the air by the charcoal follows, with heating and spontaneous firing as already explained.

"The body of the timber is heated, and this heat prevents too rapid cooling of the charred surface when the fresh air passes in, otherwise the charcoal would be placed under circumstances unfavorable to ignition. The experiment of burning iron filings in the flame of a spirit-lamp, illustrates the influence of division upon the igniting-point; now, if the iron is in a pulverulent state, as when made by hydrogen, it will, when freshly made, ignite to a red heat when shaken into the air. Then, if it is true, as stated by an English scientist, that the oxide of iron, if placed in contact with timber and excluded from the air, and, aided by a slightly-increased temperature, will part with its oxygen and be converted into very finely-divided particles of metallic iron, here is another cause of fires from heating-pipes; for, during the summer the pipes rust, and then, when heated, the rust is reduced, leaving the metallic iron in the same condition as that made by hydrogen; the temperature is lowered, fresh air appears, and oxygen is rapidly taken up by the finely-divided iron, each particle heating so rapidly as to give a red heat to the mass.

"I have not been able to prove this experimentally; but as carbon is able to overcome quite strong chemical affinities, and will reduce the oxide under strong heat, theoretically, it is possible, and the authorities all tend to prove it. Considering all the points bearing upon hot-water and steam-pipes, also heating-flues, an explanation is found of the great number of fires occurring at the approach of winter, and which are reported as from defective flues, supposed incendiary origin, or causes unknown. Steam-pipes packed in sawdust or shavings, to retain the heat while steam is conveyed to a distance, have given fires. One peculiar and important instance is on record of a fire from steam-pipes. In the drying-room of a woollen mill a pine-board was placed some three or four inches above the steam-pipes, to prevent wool from falling upon them. A fire followed, and, after being put out, a careful examination determined, to the satisfaction of all, that the heat of the pipes had distilled the pitch from several knots in the pine-board, and this dropping on the pipes had ignited and caused the fire. The illustration needs no comment, as the lesson is too plain to need pointing out."

SOCIETIES

THE EXECUTIVE BOARD OF THE TEMPORARY CIVIL ENGINEERS' COMMITTEE ON NATIONAL PUBLIC WORKS.

CLEVELAND, OHIO, March 6, 1886.

TO THE MEMBERS OF THE CIVIL ENGINEERS' COMMITTEE ON NATIONAL PUBLIC WORKS: —

Dear Sirs,—The Executive Board hereby calls a convention of the temporary Civil Engineers' Committee on National Public Works, to be held in Cleveland, Ohio, March 31, 1886. The purpose of this convention is to close up the work of the temporary organization, with a view to the permanent organization which is to be formed on the following day, or April 1. It is expected that the entire session will continue for not less than three days, or until the character and policy of the permanent organization is fully and satisfactorily defined.

It is very desirable that in the initial or formative stages of a movement of so much moment to the public welfare and to the engineering profession, that every organization of engineers in the country should be represented.

It is likewise desirable that every delegate should be fully informed of the sentiments of the Society which he represents, and familiar with the mature thought of its members.

The Executive Board fully appreciates the fact that the whole question is a matter for the most grave and deliberate consideration. It is fully persuaded by past experience, that a disinterested comparison of views will result in a wise and unanimous conclusion: systems, rather than men, are at fault.

The Executive Board also realizes that the problem involves broad questions of public policy, on which there may be such differences as may take time to determine. It is, therefore, persuaded that the foundations of an organization should be carefully based, with a view to more than temporary existence.

Societies are, therefore, urged to send delegates, as requested by the December convention. Those societies which may not wish to appoint permanent delegates at this time, can send provisional delegates, who will be entitled to all the privileges of the floor except that of voting.

The main topics for consideration at this convention will be: constitution and by-laws — ways and means — action of the convention. The Executive Board must congratulate all interested in the movement on the spontaneous response to the action of the convention of December 5, 1885. It would seem as if the sentiment of those best-informed only needed a nucleus about which to crystallize. Already twenty-two societies, with a membership of some 2,600, have in some manner responded favorably, and it is but a matter of time when all will be included. Until, however, the movement is deeply grounded and thoroughly organized, it is not thought wise to make special effort for general public coöperation, though many public men have already exhibited a gratifying interest.

The Board has felt called upon to act beyond anticipation, and pending the convention will neglect no opportunity to promote the general cause. It hopes that provisional or doubtful questions may so far determine themselves as to make clear a definite policy for the future.

Delegates are expected to send their credentials to the secretary, at the earliest possible date. A programme with full information will be issued at a later date.

The Executive Board, { L. E. COOLEY, President,
E. L. CORTHELL,
J. B. DAVIS,
JOHN EISENMANN,
AUGUSTUS KURTH.

WM. T. BLUNT, Secretary,
44 Euclid Ave., Cleveland, Ohio.

COMMUNICATIONS

[*We cannot pay attention to the demands of correspondents who forget to give their names and addresses as guaranty of good faith.*]

CATALOGUES WANTED.

AKRON, Ohio.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs,— Since you last heard from us we have passed through a siege of fire. Our office and nearly all its contents, consisting of valuable furniture, drawings, etc., the accumulation of years of study and experience, the value of which we can scarcely estimate, were all consumed in the great fire here, last Saturday morning, of the Schumaker Mills and office. We are again busy at work with what little was left. Will you please put a line in your paper, stating that, with our other effects, we lost all, or nearly all our collection of catalogues, and would be thankful if manufacturers and dealers in our class of goods would mail us copies of their catalogues. Yours truly, WEARY & KRAMER.

VENTILATION OF SCHOOLS.

BOSTON, March 1, 1886.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — I did not intend to intrude upon your paper again, although when I read your comments of my communication on the above subject I began to think that the study I have made of the subject of heating and ventilation of school-houses had not been very profitable, or else your comments were not in accordance with the facts in the case.

We cannot tell what architects could or *would* do, but only what they *have* done, and I still contend that to Mr. Vinal, City Architect of Boston, belongs the credit of the best ventilated schools in New England, with the exception of Mr. Briggs's school, which I consider to be a fine example of scientific ventilation. You speak of the Worcester High School as an example of a well-ventilated building. The following is what Dr. Lincoln has to say about that school-house:

"*Worcester High School.* — A large and pretentious building of brick and stone on prominent rising ground. The rooms are very high; the doors opening to the rooms are kept open to the very wide halls, and the air is not distinctly bad, though somewhat close. There is a considerable number of flues *not heated*. There is a large room used for drawing by fifty scholars, and once a week by ninety, which has *no ventilation*, and is *probably close*. The hall in the upper story is rather dark, owing to the lowness of the windows. The chemical library is neither well lighted nor *well ventilated*. The cellar is very large and badly lighted; it is too wide for lighting; it is used by the boys for play, and is not a very desirable place. The same want of light is found in the water-closet in the cellar. The room for the boys' clothes, also in the cellar, is very neat and convenient, but has *no ventilation*."

Those who have made a study of scientific ventilation know that a lot of foul-air flues in a building do not of necessity secure ventilation, and to say that considerable attention has been paid to ventilation, often means nothing more than that a lot of tin pipes or flues have been placed in a building to carry off the bad air if it is disposed to go that way.

I do not think any ventilating engineer or practical man would care to provide for more than thirty cubic feet of air per minute per scholar, in the *winter time* at least, as to produce more than that would be a needless waste. In regard to using fans for ventilation purposes, there are fans and fans, and the writer has only to say that those now in use in five of the Boston schools are not likely to be stopped, either on the account of expense or the neglect of the janitor. Regarding the expense of fan ventilation, Prof. Trowbridge, of Columbia College, is authority for the statement that a given amount

of air can be moved cheaper, at all times of the year, by means of a fan than by an aspirating shaft. EXPERIENCE.

[We are not yet convinced that Mr. Vinal and "Experience" are the only architects in New England who have made "a scientific study of school-house ventilation:" but we leave the matter for those who have done so, if there are any, to come forward and defend themselves against "Experience's" imputations. In regard to the Worcester school-house, it is, however, only fair to Mr. Richardson to say that the drawing-room and chemical laboratory are probably placed in positions not intended for any such purpose, and it is not necessary to infer from Dr. Lincoln's description that the architect did not intend to have some means provided for securing a movement of air through his flues, whatever may be the present method of carrying on the building.—Eds. American Architect.]

NOTES AND CLIPPINGS

The Explorations at Delos.—In the *Revue Critique*, M. Homolle gives an account of the results of the new explorations carried on at Delos. The remains of a mediæval city have been laid bare, and the discoveries in the field of classical archæology, though not so sensational as those of the previous enterprise, are still full of interest for the history of the "island schools." Fifty fragments of marble sculpture have been found, besides terra-cotta and small bronzes. To these have to be added 224 fragments of inscriptions, some dating as early as the fifth century B. C.—none later than the first century B. C. They contain funeral inscriptions, dedications, decrees, and choragic lists. One of them is 600 lines long, and the whole, when edited, are sure to throw much light on the politics and commerce of the Cyclades.

Hydraulic-Lime Concrete.—A kind of concrete, hard and solid, is now being used for building purposes in Paris. It is composed of eight parts of sand, gravel and pebbles; one part of common earth, burnt and powdered; one part powdered cinders, and one and a half parts unslacked hydraulic lime. These materials are thoroughly beaten up together, their mixture giving a concrete which sets almost immediately, and becomes in a few days extremely hard and solid, which property may be still further increased by the addition of a small quantity, say one part, of cement. Among other constructions to which this material has been applied is a house three stories in height, sixty-five by forty-five feet, standing on a terrace, having a perpendicular retaining-wall 200 feet in length and 20 feet high. Every part of this structure was made of the hard concrete, including foundations, vaults of cellars, retaining-walls and all walls, exterior and interior, as well as the cornice-work, mouldings, string-courses, balustrades, parapets, and the building is without band-iron, lintels or wood throughout.—*Exchange.*

Carlyle's Sound-proof Room.—On Saturday a memorial-tablet to Thomas Carlyle was fixed in Cheyne-walk, Chelsea. There is a quaint incongruity and irony about the whole thing that would have pleased, or rather amused Carlyle himself. Carlyle lived in Cheyne-row, Chelsea, at No. 24. The house is well-known. Americans, and even Englishmen, pay pious pilgrimages to look at it. But the premises have got into Chancery, and there they still are. Consequently it is impossible to get adequate permission to fix the tablet, and it is now stuck up, for the present at any rate, on the side-wall of No. 49 in Cheyne-walk. There it will probably remain forever, or at any rate, until all record of a genuine character has become dim, and even the "sound-proof" room is forgotten. This sound-proof room, we believe, still remains. Carlyle had a neighbor who fell into the then modern craze for Cochin-China fowls, and whose favorite cock disturbed Carlyle. Carlyle wrote angrily, demanding that the bird should be forthwith exiled or destroyed. The answer was *non possumus*. Then Carlyle, in anger, built himself a sound-proof room, forgetting that sound-proof rooms are, like safes, absolutely incapable of ventilation. The room completed, he locked himself up in it and smoked; and, being fortunately missed, was discovered by a housemaid senseless upon the floor. Old Chelsea is now rapidly disappearing, and its few relics are proportionately precious. It has been improved out of existence. The noted bun-house, Don Saltero's, and other such places which had memories of their own, are gone. Even old Battersea bridge is now being pulled up by the roots, and Cremorne Gardens (which might well have been preserved with their noble trees as a place of public recreation) have fallen a prey to the speculative builder, and are now the "Cremorne estate" in small flats.—*London Observer.*

TRADE SURVEYS

The wide-spread labor disturbances have at last begun to create apprehensions in the minds of rather conservative directors of industrial interests, that there are real dangers threatening the prosperous trade and industrial conditions. To leap to conclusions at once, the whole matter can be disposed of by stating the fact that with all the talked-of dangers from the cause mentioned a larger and steadily-increasing volume of capital is standing in the market-places of the nation bidding for employment. Capital is not frightened, it is seeking employment with an earnestness never before displayed in the history of the country, not even in the booming times of 1881 and 1882. Investments to-day are legitimate, there is an abundance of money, and there is a spirit of competition between its possessors for opportunities of employment. This in itself is, of course, not conclusive, but it points very strongly to the fact that our industries are not endangered by strikes and commotions. Those who have taken the trouble to recall the downward tendency of prices since 1883, will not be surprised that an attempt should be made by those most interested to restore lost values; this is simply what is in progress. The logic of the case demands that the restoration should be made. The prices of material and of products are steadily declining, and the price of labor is steadily advancing. The volume of money is steadily increasing, and the opportunities for its investment, taking one year with another, are steadily expanding. The elements of weakness in our industrial and commercial systems are being eliminated. The strikes throughout the country will place our industries upon a stronger foundation, strange as the statement may seem. The reason is this, or one of them, at least: Much of our industrial weakness in the past decade or two, has been due to the uncertainty as to the cost of labor, its constant fluctuations, its different price in different localities, and to the bottom fact that employers recognized that it had no value but what it would bring in open competition. Many evils resulted from these conditions. It will be to the advantage of not only laborers but of employers and investors and projectors and all others interested in the employment of labor that these elements be eliminated, that labor be given a relatively fixed value, that these fluctuations therefore be discontinued. One of the results of such a basis would be that skilled labor would be paid according to the degree of its skill; that competition would be robbed of some of its rough edges; that calculations could be made with safety; that more business would be done on a legitimate basis, and that, therefore, manufacturing interests would be both directly and indirectly concerned. These inferences may look to some like theorizing or like far-fetched conclusions, but they have a basis in conditions which must of necessity exist, and always have existed, but have not been recognized. The laborer simply means to have a voice in fixing the value of his labor, and there is more of an advantage in this than is apparent. Without permitting a trade survey to verge towards the grounds of a thesis, it may be said that very erroneous economical theories have obtained recognition in the relations of capital and labor. These agitations are clearing this field and are bringing out into clearer light what these relations should be, and in this respect they are accomplishing good. The industries are in a healthful condition, labor is everywhere well employed, excepting where strikes exist; disputes are being settled by the hundreds. At the recent session of the general executive committee of the Knights of Labor, over three hundred disputes and threatened strikes were disposed of amicably. In a comparatively short time the equalizing process will be completed and harmony will then be developed. During the past six days architects and builders in ten of the leading cities of the country, have announced the projected construction of about 2,500 houses, besides a large number of manufacturing establishments and public buildings. The reports from architects are of a monotonous nature. They continue to be exceptionally busy. Builders are vigorously preparing to crowd through their engagements, anticipating a renewal of mid-summer contracts, of which there are at present many indications. In some manufacturing centres there is a scarcity of brick, but this will be of short duration. Several new yards have been established, and competition will be sufficient to protect builders. Manufacturers of building material are crowding their capacity; so far as reports have been received, an accumulation of stock will be made for emergencies. Some good building authorities feel that the striking spirit and railroad quarrels and other incidents are detracting attention from the real magnitude of building preparations, and that the trade and public will be surprised at the amount of work that will be on hand by mid-summer. As stated above, a great deal of capital is seeking investment, and money-lending facilities are being extended into the West by the incorporation of concerns for the lending of money and for the examination of securities. A company of this character has just been projected in New York. The borrowing requirements of the country are growing and our banking facilities are not quite adapted to these wants; financiers are preparing to establish more convenient machinery for the loaning and protection of money among borrowers. The iron trade has been remarkably quiet for a few days, no symptoms of weakness are observable, crude iron is very firm. In western Pennsylvania a slight advance has taken place. In Lake and Ohio-valley markets a large amount of material is changing hands. Steel-making capacity is being increased and makers of rolling-mill machinery have not been busier for years. Within a few days orders for over 20,000 tons of special grades of steel were placed in Liverpool, and orders for over 100,000 tons of crude iron have been cabled. Importation not only of iron and steel, but of textile products and other manufactured products will of necessity increase because of the high prices of home products. Our latest advices from authoritative sources in all principal lumber markets, indicate that the general tendency of the past few weeks is still working in a straight line towards firmer prices. Every possible preparation is being made by handlers of all kinds of wood, but with all the immense supply assured, the spirit of competition will be less active, and better prices realized, for the more carefully prepared stocks. The supplies of yellow-pine, cypress, Southern walnut, and some other Southern woods, will be very largely increased in this and other North Atlantic markets. The rates of money in the West on good security are five to six per cent; as soon as more ample lending facilities are established the rate of interest must decline. This rate is reasonable, but there is much capital that would willingly take less. Opportunities for railroad investment will not absorb all the available capital, but will, year by year, leave a larger surplus for general investment. This tendency has been observable for three or four years. Railroad managers are building more of their additional mileage out of their own earnings than heretofore, and each year will develop a greater ability on the part of railroad companies to prosecute their enterprises independently of money-lenders, large or small. There is a wonderful activity in the smaller towns and villages, not only throughout the New England States, but through the far Western States; very little of this information finds its way into public prints because of the lack of established channels. Towns of from 2,000 to 5,000 inhabitants are stimulated with a spirit of activity. The basis of this activity is manufacturing. The extent of this enterprise will be determined largely by the opportunities afforded by money-lenders. Capital, with its extremely conservative instincts, hangs closely to financial centres, accepting a mere pittance for its assistance. There are influences at work, as above indicated, to draw it out into reproductive channels throughout the great West and South, irrigating those sections, so to speak, and making them more valuable and more highly productive. A host of little industries have been springing up during the past year or two, all of which could profitably use assistance, and the lending of money to them will help to increase the industrial activity and expand building operations. The evidences of our industrial expansion are multiplying on every hand; the small towns and villages are doing their best, extending invitations to capital and enterprise. Our large cities are not behind; our railroad builders are just as energetic and enterprising. New territory is being opened up, and little industries are springing up to create traffic. The machine-shops of the New England and Middle States are loaded down with orders, and perhaps as much as twenty-five per cent of the capacity is working "over time" to complete orders for work calling for delivery in April. A great deal of business which has been held back for a month or two, has been coming forward during the past week or two, and, in spite of all the labor agitations, and advancing prices, there is an activity and a confidence among the leaders of the industries which points to a continuous improvement.

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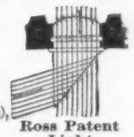

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Alterations.

KANSAS CITY, MO.—C. E. Hasbrook, alterations in house 1718 Jefferson St., to cost $5,000.

MIDWAUKEE, WIS.—Repairs and addition on brick store on East Water St., for Mrs. Flanders, at a cost of $9,000.

NEW YORK, N. Y.—Alterations and an addition are to be made to Nos. 302 and 304 West One Hundred and Twenty-fourth St., for Mr. Jas. Rozell, at a cost of $5,000; from designs of Mr. Jos. M. Dunn, who has also designed alterations to be made to No. 114 East Twenty-second St., to cost $3,500, for Louisa J. Alley.

PHILADELPHIA, PA.—Addition to brick dwell., s s, Clearfield St., bet. Jasper and Emerald Sts.; owner, John Dauson, 1855 Frankford Ave.

Alteration and addition to two dwells., Nos. 478 and 480 Conroe St., Roxborough; owner, George Gillet, Mitchell St., Roxborough.

Addition to three-st'y brick factory; s s, Allegheny Ave., e Trenton Ave; contractor, John Dauson, 1855 Frankford Ave.

Apartment-Houses.

CHICAGO, ILL.—Flat building for Mr. J. Richards, to be built on Twelfth St., near Robey St.; cost, $3,800; McAffe & Lively, architects.

Loomis St., No. 722, three-st'y flats; J. Lomasek, owner; F. C. Sayer, architect.

Bissell St., No. 151, three-st'y flats; cost, $4,500; J. Ciskowsky, owner.

West Ohio St., No. 303, three-st'y flats; cost, $4,500; L. Jacobson, owner; B. Tobiason & Co., builders.

Market St., three-st'y flats; cost, $5,000; J. Nelson, owner; S. Linderoth, architect.

Congress St., two-st'y flats; cost, $3,000; V. Bullier, owner; R. G. Pentecost, architect.

Sedgwick St., No. 481, four-st'y flats; cost, $13,000; P. H. Schappeman, owner; E. F. Boss, architect.

Hermitage Ave., 3 two-st'y flats; cost, $10,000; R. E. McKay, owner and builder.

Fowler St., No. 34, three-st'y flats; cost, $4,500; M. Richstetter, owner.

NEW YORK, N. Y.—*Eighth Ave.*, n w cor. Eighth Ave. and One Hundred and Thirty-third St., 3 five-st'y brick flats, flat tin roof; cost, $70,000; owner, Henry G. Peters, 57 East One Hundred and Twenty-fourth St.; architect, Bart Walther, 2255 Third Ave.

Second Ave., s w cor. Thirty-ninth St., 2 five-st'y brick flat, flat tin roofs; cost, $40,000; owner, Gordon Brothers, 240 East Forty-second St.; architect, G. A. Schellinger, 128 Broadway.

Sixty-third St., s s, 400′ w Ninth Ave., 5 five-st'y brick flats, flat tin roof; cost, $400,000; owners, Gillie Walker & Lowson, 519 West One Hundred and Fourth Sts.; architect, M. V. B. Ferdon, 16 Morton St.

Norfolk St., No. 12, five-st'y brick flat, flat tin roof; cost, $12,000; owners, Simon Eppstein Shreeveport Sons: architect, Wm. Graul, 215 Bowery.

Madison Ave., s w cor. One Hundred and Third St., five-st'y brick flat, flat tin roof; cost, $19,000; owner, A. Louis Sevestre, 121 East Fifty-third St.; architect, John Miller, 335 Broadway.

Forty-ninth St., s s, 200′ e Ninth Ave., 10 five-st'y brick flats, flat tin roof; cost, $180,000; owner, Wm. Rankin, 253 West Fifty-first St.; architect, John Miller, 335 Broadway.

Thirty-ninth St., s e cor. Eleventh Ave., 4 five-st'y brick flats, flat tin roof; cost, $68,000; owner, John Totten, 250 West Forty-ninth St.; architect, M. L. Ungrich, 1554 Broadway.

West Forty ninth St., No. 359, five-st'y brick flat, flat tin roof; cost, $18,000; owner, J. C. Miller, 239 West Fiftieth St.; architects, McKim, Meade & White, 57 Broadway.

Manhattan St., n s, 510′ 11″ w Ninth Ave., five-st'y brick flat, flat tin roof; cost, $12,000; owner, Wilhelmina Juch, 1970 Second Ave.; architect, Charles Von Biela, 1970 Second Ave.

One Hundred and Fifteenth St., n e cor. Eighth Ave., four-st'y brick flat, flat tin roof; cost, $35,000; owner, Estate of Silvester Brush, 31 Nassau St.; architect, H. J. Hardenburgh, 10 West Twenty-third St.

Eighty-fourth St., Nos. 117 *and* 119, 2 five-st'y brick flats, flat tin roof; cost, $19,000; owner, M. H. Schneider, 1539 Avenue A; architects, Herter Bros., 314 East Forty-third St.

On the s w cor. Lexington Ave. and One Hundred and Nineteenth St., 4 five-st'y brown-stone flats, are to be erected by Messrs. Wm. Fernschild & Son.

ST. LOUIS, MO.—P. Cullnany, 2 adjacent two-st'y brick flats.; cost, $4,000; A. W. Baker, architect; D. Cregan, contractor.

Churches.

BALTIMORE, MD.—Chas. Carson is the architect for a new church to be erected by the members of St. John's Independent Methodist Chapel, at the cor. of Madison Ave. and Laurens St.

BROOKLYN, N. Y.—It is announced that the Marcy Ave. Baptist Church intends to erect a new edifice costing $50,000, on the land adjoining the present building, as soon as that sum shall have been subscribed.

MINNEAPOLIS, MINN.—Seventh Day Adventist Church Society, one chapel-building, cor. Lake St. and Fourth Ave.; cost, $3,500.

NEW YORK, N. Y.—On the n s One Hundred and Nineteenth St., 300′ w Fifth Ave., the First Reformed Church will build a church edifice on a lot 70′ x 100′.

Factories

AKRON, O.—A public meeting of capitalists was held here March 8, to devise means of rebuilding Ferdinand Schumacher's Mammoth Mills, which were destroyed by fire on Saturday morning. The plan is to form a stock company. Mr. Schumacher offered to turn in his barley, flour and starch mills, which he still has, and the property on which the other mills were burned, at $65,000. The Akron Cereal Mills property is to be turned in and continue to fill orders, while $500,000 stock will be raised to make the capital $1,500,000. For this purpose a committee of ten was appointed.

GUILFORD, CONN.—It is finally settled that the Atwood silk mill is to be located here, and work will be begun at once upon the building. The site selected is quite near the railroad, and east of the station.

LYNCHBURG, VA.—A four-st'y tobacco factory is to be erected by Messrs. Karn & Hickson.

MALDEN, MASS.—An agent of an electric-light company, of Boston, will build a building in the rear of Yerxa's new block on Pleasant St.

MILTON, ME.—Messrs. Fuller & Legroo are to build this season a mill near Wilton depot for the manufacture of shovel handles.

MILWAUKEE, WIS.—Brick factory for the Kipp & Turner Furniture Co., on cor. Park St. and Fourth Ave.; cost, $15,000.

MINNEAPOLIS, MINN.—Mr. Massalt, two-st'y brick paper factory 128 Plymouth Ave.; cost, $4,500.

MONSON, MASS.—Cushman & Sons will rebuild their mill at once. The matter is in the hands of the Flynt Construction Co., of Palmer, Mass.

NEW BEDFORD, MASS.—A new cordage factory is about to be established here. The persons most interested are Messrs. James S. Howard, Thomas B. Wilcox, Samuel C. Hart, Henry C. Denison and Capt. J. B. Winslow. A building will be erected 250′ long by 75′ wide, three-st'y, in which the twine will be manufactured. As yet a site has not been decided upon, but the work will be pushed forward as soon as subscriptions to the remainder of the capital stock is assured.

PORTAGE, WIS.—Carroll E. Gray, of Beloit, will put up gas-works; cost, $30,000.

PRESTONVILLE, KY.—A five-st'y warehouse is to be built by the Carroll Co. Distilling Co.

ST. LOUIS, MO.—Peters Furniture Factory; repairing a three-st'y brick factory; cost, $3,000; William, Kirksick contractor.

Hotels.

BALTIMORE, MD.—William L. Stork, Esq., has commenced work on a five-st'y private hotel, cor. Eutaw Pl. and Lanvale St.

BIRMINGHAM, ALA.—The Caldwell Hotel Co., will build a large hotel here; capital, $120,000.

FORT HAMILTON, N. Y.—Work was begun March 11 upon the new hotel to be built upon the site of the burned Mansion House by the Brooklyn City Railroad Company. The cost will be about $80,000.

NEW BRUNSWICK, N. J.—Albert H. Tyler, of this city, will build a $30,000 hotel on Cedar Ave., below Hollywood Park.

SIOUX CITY, IA.—Mr. D. W. Townsend, of Marshall town, Ia., has just closed a $200,000 contract for a hotel in this city; E. W. Loft, of Sioux City, being the architect.

ST. LOUIS, MO.—J. O'Neil will build a four-st'y brick hotel; cost, $73,981; J. Helm, contractor.

Houses.

ARCHVILLE, O.—Designs for a house for Mr. Beecher are being prepared by Weary & Kramer, Akron, O.

ARDMORE, PA.—Mr. Wm. H. Miller is building a colonial cottage of frame and shingles here; Mr. Lonsdale of Philadelphia, is the architect.

BALTIMORE, MD.—John Fox, 3 three-st'y brick buildings, w s John St., s North Ave., 5 three-st'y brick buildings, n s Lanrens St., e Bolton St.

Fred'k C. Stolup, three-st'y brick buildings, s s Saratoga St., bet. Eutaw and Howard Sts.

Geo. A. Wagner, etc., 4 two-st'y brick buildings, e s Etting St., n Presstman St.

Louis H. Baker, three-st'y brick building, w s Foster Alley, n Preston St.

C. F. Michelman & Son, 5 two-st'y brick buildings, e s Duncan Ally, bet. Pratt & Gough Sts.

BEECH HAVEN, N. J.—A cottage is being constructed for Mr. Jno. H. Converse, under the supervision of Messrs. Wilson Bros. & Co., of Philadelphia, architects.

BOSTON, MASS.—*Unnamed St.*, near Spring St., house, 20′ x 29′; Dennis Cronin, owner and builder.

East Eighth St., Nos. 366-374, 6 dwells., 16′ x 28′; James W. Devine, owner and builder.

Fairview St., near Train St., house, 29′ 6″ x 34′; Geo. A. Noyes, owner; builders, Meyers Bros.

Sheriden St., near Centre St., house, 23′ x 49′; William Tobin, owner; W. W. Fitzsimmons, builder.

West Second St., Nos. 369 *and* 371, house, 27′ 6″ x 37′; H. B. Rankin, owner; Dennis Shields, builder.

Hillside St., near Parker St., house, 21′ x 27′; S. Rantin, owner; R. A. Watson, builder.

Rogers St., No. 16, house, 17′ x 32′; C. E. Snow, owner; William Tynes, builder.

Brookfield St., No. 5, house, 22′ and 25′ x 35′; G. A. Lancaster, owner and builder.

BROOKLYN, N. Y.—*Jefferson Ave.*, s s, 140′ e Lewis Ave., 2 three-st'y brick dwells., tin roofs; cost, each, $4,000; owner and builder, B. Linnikin, 300 Stuyvesant Ave.

Halsey St., s s, 69′ 10″ w Howard Ave., 5 two-st'y frame (brick-filled) dwells., gravel roofs; cost, each, $2,800; owner and architect, J. G. Glover, 219 Montague St.

Decatur St., s s, 375′ w Reid Ave., 8 three-st'y brown-stone dwells., tin roofs; cost, each, $7,000; owner and architect, John C. Bushfield.

Halsey St., n s, 100′ e Marcy Ave., 8 three-st'y brown-stone dwells., gravel roofs; cost, $7,500 each; owner, Mary E. Fowler, 8 Verona Pl.; architect and mason, Geo. W. Waring; contractor, Levi Fowler.

Dean St., n s, 200′ e Franklin Ave., 5 three-st'y brown-stone dwells., tin roofs; cost, each, $8,000; owner, Bryan McAveney, 992 Bergen St.; architect, S. Hazzard.

Columbia Heights, No. 95, w s, cor. Cranberry St., four-st'y brick dwell., tin roof; cost, $16,000; owner, Chas. Arbuckle, 82 Willow St.; architect, A. F. Norris.

Greene Ave., s s, 100′ w Nostrand Ave., 12 three-st'y brown-stone dwells., flat tin roofs; cost, each, $6,500; owner, T. H. Brush, 587 Bedford Ave.; architect, Fred. E. Lockwood.

Halsey St., s s, 160′ w Nostrand Ave., three-st'y brick and brown-stone dwell., tin roof; cost, $8,000; owner, A. Cora King, 46 Halsey St.; architect, R. S. Daus; builders, Martin & Dixon and Mr. Hendrickson.

CANTON, O.—Weary & Kramer, of Akron, O., are to build a house for Mrs. C. Aultmann.

CHICAGO, ILL.—J. L. Campbell, 6 two-st'y dwells., Congress St.; cost, $18,000; C. A. Weary, architect.

Compton & Murdock, 4 two-st'y dwells., 1028 Wilcox Ave.; cost, $6,000; J. Austin, architect.

H. Franlen, two-st'y dwell., 422 West Fourteenth St.; Filo Bros., builder.

D. F. Henderson, 4 two-st'y dwells., Hoyne Ave.; cost, $6,000.

Mrs. H. S. Shedd, two-st'y dwell., Forest Ave.; cost, $4,500; A. McIntosh, architect.

W. F. Cuthbert, 2 three-st'y dwells., Prairie Ave.; cost, $12,000; W. F. Cuthbert, builder.

Mrs. S. Ranney, three-st'y dwell., South Park Ave.; cost, $8,000; W. F. Behel, architect.

W. B. Phillips, 6 three-st'y dwells., South Park Ave.; cost, $50,000; W. F. Behel, architect.

J. A. O'Connell, 3 two-st'y dwells., Congress St.; cost, $10,000; J. J. Flanders, architect.

A. Sochworoch, three-st'y dwell., 41 String St.; cost, $5,000.

G. N. Hull, 2 two-st'y dwells.; cost, $12,000; H. Seely, architect.

Dr. Hansen, 2 two-st'y dwells., South Park Ave.; Ave.; cost, $14,000; Gullsdorff, builder.

EAST HARTFORD, CONN.—Mr. James Morris is building a new house on his lot near Burnside.

JERSEY CITY, N. J.—Three cottages for Mr. Lembeck, Esq.; cost, $4,000 each; E. Simon, architect.

Brick dwell. on Bright St., for Mr. H. Healy; cost, $7,500; E. Simon, architect.

KANSAS CITY, MO.—Hayes Bros., frame dwell. on Woodland Ave., two-and-a-half-st'y, 30′ x 45′; cost, $4,500.

MILWAUKEE, WIS.—A brick veneer dwell., for Wassow on Walnut St.; cost, $3,137.

Frame dwell., for Mr. Bloch on Seventeenth St.; cost, $3,000.

Frame dwell. on Walker St., for J. E. Rateliff, at a cost of $2,700.

Frame dwell., for J. Winter on Chestnut St.; cost, $3,000.

Frame dwell. on Van Buren St., for A. D. Seaman; cost, $2,500.

Frame dwell. on Grove St., for A. Mueller; cost, $3,000.

MINNEAPOLIS, MINN.—J. W. Arctander, two-st'y wood dwell., 3447 Lynndale Ave.; cost, $4,000.

F. J. Wagner, double wood dwell., 1829-31 Park Ave.; cost, $5,500.

M. S. Gunn, two-st'y brick dwell., 2433 Harriet Ave.; cost, $4,000.

D. A. Pulver, 2 two-st'y dwells., 3035-39 Third Ave., s; cost, $7,000.

F. B. Fuller, two-st'y wood dwell., 2712 Grand Ave.; cost, $4,000.

Ingham Bros., two-st'y wood dwell., 2924 Second Ave., s; cost, $3,000.

J. Bloomquist, two-st'y wood dwell., 2811 Stevens Ave., cost. $3,500.

F. Morrison, two-st'y wood dwell., 2801 Second St., n; cost, $3,500.

H. J. Dahn, two-st'y wood dwell., 1710 Lakeview Ave.; cost, $4,000.

D. K. Adams, two-st'y wood dwell., 2546 Ninth Ave., s; cost, $3,500.

MOUNT AIRY, PA.—Mr. Thomas Lonsdale has plans prepared for a country house, for Mr. Edward Hopkinson; three-st'y, to cost about $8,000.

NEWPORT R. I.—Mr. D. E. Young has contracted for 4 one-and-one-half-st'y houses, to be built on Third Street. Messrs. Gladding & Young are the contractors.

Oxx Bros. are to build a cottage on Arnold Ave., for Mr. Joseph C. Coggeshall.

NEWTON, MASS.—Dr. H. J. Bigelow, of Boston, is soon to have built on Oak Hill a house, from plans by H. H. Richardson, architect.

NEW YORK, N. Y.—On Broadway, cor. Tenth Ave. and Seventy-third St., 6 brick houses of different dimensions are to be built from designs of Mr. Chas. C. Haight.

On the w s Sixth Ave., bet. One Hundred and Sixteenth and One Hundred and Seventeenth Sts., 22 four-st'y and basement houses; cost, $500,000; from plans of Mr. Jno. G. Prague, for Mr. John G. Sherwood.

At Nos. 209-211 West One Hundred and Twenty-second St., 2 three-st'y and basement dwells., brown-stone fronts are to be built at a cost of $24,000; from plans of Mr. Geo. M. Walgrove.

On the e s Park Ave., bet. Seventy-eighth and Seventy-ninth Sts., 2 four-st'y and basement dwells., are to be built by Mr. A. Blumenthal; from plans of Messrs. A. Zucker & Co., at a cost of $40,000.

On the s e cor. Riverside Drive and One Hundred and Fourteenth St., a house is to be built by Mr. S. F. Sherman; from plans by Mr. A. B. Jennings.

One Hundred and Sixteenth St., n s, 50′ w New Ave., 3 three-st'y and basement dwells., flat tin roofs; cost, $12,000; owners, Cunningham & Henderson, 274 West One Hundred and Twenty-eighth St.; architects, Thom & Wilson, 1267 Broadway.

West End Ave., 18′ n of n w cor. Seventy-fifth St., three-st'y and basement brick dwells. tin and tile roof; cost, $10,000; owner, John Gallatley, 34 Gramercy Park; architects, Berg & Clark, 152 Fifth Ave.

OBERLIN, O.—Mr. Beckworth is to have a house built after designs, by Weary & Kramer, of Akron.

PASSAIC, N. J.—Three-st'y brick house and store, for Edw. Kip; cost, $10,000; Andrew Derrom, architect, Paterson, N. J.

PATERSON, N. J.—Bluestone house for S. G. McKiernan, cor. Prince and De Grasse Sts., two-st'y and French roof; cost, $4,000; Andrew Derrom, architect.

PHILADELPHIA, PA.—Mr. Thomas P. Lonsdale is the architect of a three-st'y house, cor. Broad and Oxford Sts., for Mr. S. B. Colladay. It has a mansard roof, and is to cost about $25,000.

Mr. Lonsdale also has a three-st'y house on the opposite cor. Broad and Oxford Sts., for Mr. C. B. Porter. It is to have a stable, and the whole is to cost about $25,000.

Mr. Lonsdale is the architect of a $7,000 house on Broad St., below Ellsworth St.; owner, Mr. Thos. Allen; three-st'y, the first is brown-stone, and the second and third is pressed brick.

Howard A. Beezley, 4 houses, n s Queen St., bet. Wayne and Pulaski Sts., three-st'y stone and brick, 17′ x 44′.

Four three-st'y brown-stone and brick dwells., 18′ x 56′, West Sixth St., bet. York and Cumberland Sts.; owner, D. B. Wendle, 2452 Frankford Ave.

Two-st'y brick dwell., 22′ x 50′, s s Queen St., e Morris St.; owners, Owen & Ravey, 6 Duval St., Germantown, Phila.

R. H. S. Hoffman, 2 three-st'y frame and brick houses, 14′ x 57′, w s East Walnut Lane, above Hancock St.

Thomas and William Cope, three-st'y brick dwell., 20′ x 50′, n e cor. Flemming and Cotton Sts., contractor, James O. Holgate, 403 Connarrow St., Roxborough.

PROVIDENCE, R. I.—*Creighton St.*, s w cor. Brown St., frame dwell.; cost, $4,500; owner, W. S. Budlong; builder, H. K. Hilton.

Wesleyan Ave., near Broad St., frame dwell.; cost,

BOOK NOTES.

PROF. W. J. ROLFE says, in a recent number of the *Literary World*: "Mr. Hutton's book, we may remark incidentally, is the best guide to London localities connected with literary men that has yet appeared; and its alphabetical arrangement (by authors) and the two full indexes of persons and places, filling almost forty pages, render it very convenient for both tourist and student."

THE *Beacon* (Boston) is pleased to compliment *The American Architect*: "Illustrations of Hanseatic architecture, of Colonial and modern work, and the good contributions of the anonymous contributors, who discuss the news and show an amount of information coupled with good sense and great modesty that unite in making the *Architect* the best journal of its kind. Everybody who cares for honest architecture will be delighted with the excellent periodical. It is full of news, pictures, information, and the right spirit that loves art and honors science."

THE literary critic of the *Philadelphia Press* finds these fine discriminating words to speak of the new "Life of Longfellow; "Indeed, *the* life of the poet, and it will take its place side by side with the standard Boswells of literature. What Boswell did for Johnson this painstaking clergyman has done for his famous brother. Back of every line one is charmed to note the touch of a hand made tender by mellow memories. The work is not a study or eulogy, or a call to the world asking for more praise than has been given — it is none of these, but a simple setting forth of all that need be known as to twha he worked out and as to what he gave for the world's good. Samuel Longfellow is not so much the biographer as the editor; he uses fine art and a sympathetic pen and lets his dead brother speak from the moving point thereof."

ONE of the most celebrated of Roman critics and writers addressed the following words to Isaac Henderson, *apropos* of his new novel "The Prelate." "If it will give you pleasure to think that you have kept a good many persons awake far beyond their usual hours at night and caused various little domestic and social disarrangements to persons who never did you any harm, I think you may safely anticipate a happy future. I awoke after the ball feeling disposed to take my coffee in bed. With the coffee I took your book. The morning passed, and I still remained reading 'The Prelate.' Noon passed, and at one o'clock luncheon surprised me. I tasted it with the tray set on a pillow, my mind distracted with suspense. At two o'clock I laid down the finished book with a sigh. I am sure the book will have a success, and I do not see where it can be criticised. It is written with quiet, even fastidious good taste. The interest of the story is the most perfect *crescendo* possible."

THE leading review in this week's *Athenæum* (of London), four columns long, and written with enthusiastic interest, is about Percival Lowell's "Chosön: The Land of the Morning Calm." This treasure volume of Korean information is commended in high terms.

THE London *Literary World* gives three columns of review to Edward King's vivid romance of the Northern Pacific Railroad: "The Golden Spike," which it pronounces "to the full as original and crisply brilliant as 'The Gentle Savage.' The book is its own best exponent, and we cordially commend it to those who enjoy good literary workmanship as much as the complications of fiction."

TWO of the most interesting novels ever written about modern Roman life, with its many picturesque phases and semi-mediæval conditions, are Barrett Wendell's "The Duchess Emilia," and Isaac Henderson's "The Prelate," both of them published by Ticknor & Co.

AN editorial in the *Boston Record* says: —

"Altogether the most fascinating book that has been published for months is the 'Life of Longfellow,' skilfully and modestly prepared from the poet's journal and letters by his brother, the Rev. Samuel Longfellow. It is full of the most interesting and picturesque and poetic things. The humor of the story is often delicious, and the pathos that is own brother to humor is present, too."

Wilson's Rolling Venetian Blind.

A very DURABLE, HANDSOME and CONVENIENT piece of Window Furniture. It takes the place of the cumbersome folding shutters, saving the studding-out and boxing, and giving extra room. Can be fitted with lower sliding panel so as to close either half of window. Running in grooves, it does not shake or rattle, and is a protection against thieves.

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$3,500; owner, T. H. Leonard; builder, A. H. Stewart.

Hope St., e s, bet. Power St. and Charlesfield St., frame dwell.; cost, $7,500; owner and architect, J. M. Cross; builders, A. A. Grey & Co.

Portland St., cor. Providence St., frame dwell.; cost, $3,000; owner, J. Fletcher; builder, B. Mason.

Branch Ave., near Douglass Ave., 3 frame dwells.; cost, $6,500; owner, P. Dunn; builders, Murphy & Bro.

Hope St., n w cor. Bowen St., frame dwell.; cost, $6,000; owner, Emily P. S. Rogers; architect, H. B. Ingraham; builders, Whittaker & Smith.

Hannah St., No. 13, frame dwell.; cost, $3,000; owner, J. Manning; builder, Thomas Barry.

Waverley St., n s, 2 frame dwells.; cost, $4,000; owner, Dr. P. T. Walker.

Broad St., s w Summer St., frame dwell.; cost, $5,000; owner, H. P. Richards; builder, J. F. Pitts.

Butler Ave., frame dwell.; cost, $3,500; owner, H. W. Goff; builders, A. A. Grey & Co.

High St., near Edward St., frame dwell.; cost, $5,000; owner, M. Stokes; architect, G. W. Cady; builder, A. J. C. Larned.

State St., s w cor. Field St., frame dwell.; cost, $4,500; owner, J. Fletcher; architect, G. W. Cady; builder, A. J. C. Larned.

Greenwich St., No. 75, 2 frame dwells.; cost, $15,000; owner, A. B. Gardiner; builder, Harris Angell.

ROSEMONT, PA.— Mr. H. F. Weeks is building a cottage; architects, Messrs. Wilson Bros. & Co., of Philadelphia.

ST. LOUIS, MO. — Mrs. Korner, 3 adjacent two-st'y brick dwells.; cost, $5,000; architect, Aug. Beinke; contractors, Hartmann & Debes.

H. Vogelsang, 2 adjacent two-st'y brick dwells.; cost, $5,000; architect, Aug. Beinke; contractor, H. Drees.

L. Doven, two-st'y brick dwell.; cost, $2,000; contractors, Hosh & Clifford.

H. Strodick, double two-st'y brick dwell.; cost, $5,200; contractor, B. Aepken.

Mrs. L. V. Bevis, alteration of two-st'y brick dwell.; cost, $5,000; architect, Chas. K. Ramsey; contract sub-let.

BUILDING INTELLIGENCE.

G. B. Young, two-st'y brick dwell.; cost, $6,000; architect, Chas. K. Ramsey; contract, sub-let.

E. Dehlendorf, two-st'y brick dwell.; cost, $2,800; G. N. Hanburger, architect; T. Torwegge, contractor.

Aug. Koetmeyer, 2 adjacent two-st'y brick dwells.; cost, $2,500; architect and contractor, Jos. Schulder.

Miss Kraull, two-st'y brick dwell.; cost, $2,300; contractor, B. Dengler.

J. Maschek, two-st'y brick dwell.; cost, $2,000; architects and contractors, Kente & Hildebrand.

H. Schur, one-st'y brick dwell.; cost, $2,000; architects, Kente & Hildebrand; contractor, C. H. Ellermann.

Mary E. Retchie, two-st'y brick dwell.; cost, $3,000; contractor, G. Koek.

Mrs. L. J. Foster, two-st'y brick dwell.; cost, $3,200; architect, Wm. H. Foster; contract sub-let.

F. Behring, three-st'y brick dwell.; cost, $5,000; architect, Beaman; contractor, A. Haeseler.

A. J. Riddle, 2 adjacent two-st'y brick dwells.; cost, $3,000; contractor, A. J. Riddle.

J. Ficht, 2 adjacent two-st'y brick dwells.; cost, $5,200; architect, Aug. Beinke; contractors, Gross & Beinke.

J. C. Lee, two-st'y brick dwell.; cost, $2,700; architect, C. C. Helmers; contractor, D. Stevens.

J. H. Pohlmann, 2 adjacent two-st'y brick dwells.; cost, $3,000; contract sub-let.

Chas. Claas, 2 adjacent three-st'y brick dwells.; cost, $6,000; architects, P. F. Meagher & Son; contract sub-let.

R. F. Miller, two-st'y brick store and dwell.; cost, $2,800; architect and contractor, R. F. Miller.

O. Kline, two-st'y brick dwell.; cost, $2,000; contractor, R. Doetste.

Mrs. M. C. Bringhaus, two-st'y brick dwell.; cost, $4,000; architect, A. Monschein; contractor, John Low.

H. Steinmeyer, 2 adjacent two-st'y brick dwells.; cost, $3,500; architect, Wm. Gahl; contractors, Wm. Gahl & Co.

P. Bobe, two-st'y brick dwell.; cost, $5,000; architect, Chas. F. May; contractor, J. Dunmeyer.

BUILDING INTELLIGENCE.

WASHINGTON, D. C. — Three-st'y brick dwell., cor. Hillyer and Conn. Aves., n w., for Mr. F. Wharton, cost, $30,000; R. I. Fleming, architect and builder.

Three-st'y brick dwell., Conn. Ave., near Q St., n w, for Mrs. M. E. Ware; cost, $9,000; R. I. Fleming, architect and builder.

Three-st'y brick dwell. and store, Eleventh St., bet. F and G Sts., n w, for R. W. Barker; cost, $5,000; R. Downing, builder.

Two two-st'y brick dwells., Eleventh St., bet. B and C Sts., s e, for J. W. York & Son; cost, $4,400.

Two-st'y brick dwell., O St., bet. Seventh and Eighth Sts., n w, for C. Horner; cost, $3,500; J. L. Schaffirst, builder.

Two three-st'y brick dwells., Eighth St., bet. G and A Sts., n w, for Mrs. Annie Barker; cost, $7,000.

Three-st'y brick dwell., Nineteenth St., bet. N and Dupont Circle, for F. W. Lantz; cost, $7,000; W. Bruce Gary, architect, F. Baldwin, builder.

Three three-st'y brick dwells., R. I. Ave., bet. Ninth and Tenth Sts., n w, for C. E. Foster; cost, $15,000; N. Haller, architect and builder.

Three two-st'y brick dwells., Eighth St., near C St., for Wm. Aw; cost, $5,500, J. L. Schaffirst, builder.

Two-st'y brick dwell., R. I. Ave., near Boundary St., n w; cost, $3,300; R. Downing, builder.

Three-st'y brick dwells., P St., bet. Seventeenth and Eighteenth Sts., n w, for D. A. Windsor; cost, $36,000; A. R. Duryee, architect.

Two two-st'y brick dwells., H Sts., bet. Fourth and Fifth Sts., n w, for A. Behrend; cost, $4,000; J. Germuller, architect.

Five two-st'y brick dwells., cor. Twenty eighth and Olive Sts., n w, for Peter McCartney, architect and builder; cost, $6,000.

Two-st'y brick dwell., H St., bet. Twenty-first and Twenty-second Sts., n w, for W. R. Brown; cost, $5,000; J. H. Byram, builder.

Three two-st'y brick dwells., cor. Twenty-third and I Sts., n w, for J. A. Byram; cost, $7,800.

Two-st'y brick dwells., H St., bet. Eighth and Ninth Sts., n e, for Thomas Totse; cost, $3,600.

Three-st'y brick dwell., R. I. Ave., bet. Fourteenth and Fifteenth Sts., n w, for N. B. Clarke; cost, $9,000; W. P. Lipscomb, builder.

Three-st'y brick dwell., K St., bet. Fifteenth and Sixteenth Sts., n w, for B. H. Warder; cost, $80,000; H. H. Richardson, architect, Boston; Norcross Bros., builders, Boston.

Three-st'y brick dwell., H St., bet. Nineteeth and Twentieth Sts., n w, for Ida M. Demonet; cost, $6,500; Thos. J. King, architect and builder.

Three-st'y brick dwell., cor. Sixteenth and L Sts., n w, for Henry Strong; cost, $30,000; H. L. Page, architect; Langley & Gettenger, builders.

Three-st'y brick dwell. and store, E St., bet. Ninth and Tenth Sts., n w, for Mrs. M. V. Burton; cost, $7,000; W. A. Kimmel, builder.

Two-st'y brick dwell. and store, cor. New Jersey Ave. and H Sts., n w, for C. Corrigan; cost, $6,000; P. Wade, builder.

Two two st'y brick dwells., S St., bet. Fifth and Sixth Sts., n w, for H. W. Rehan; cost, $2,600.

Two three-st'y brick dwells., L St., bet. Thirteenth and Fourteenth Sts., n w, for Jas. M. Green; cost, $9,300; R. L. Parry, builder.

Three-st'y brick dwell., East Capitol St., bet. Sixth and Seventh Sts., n e, for L. K. Beatty; cost, $6,500; Rhodes & Simms, builders.

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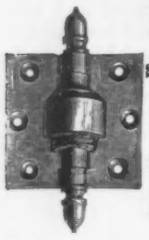

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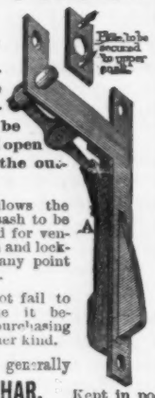

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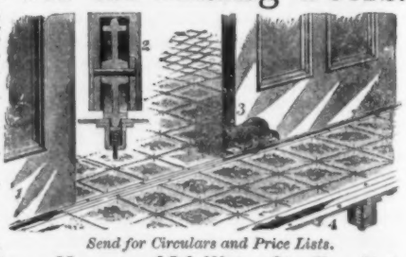

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BUILDING INTELLIGENCE.

Two two-st'y brick dwells., F St., bet. First and Second Sts., n w, for A. H. Lee. cost, $6,200; A. Lyle, builder.

Three-st'y brick dwell., P St., bet. Seventeenth and Eighteenth Sts., n w, for Mrs. Caroline Bloomer; cost, $7,000; Jno. Sweeny, builder.

Three two-st'y brick dwells., V St., bet. Seventeenth and Eighteenth Sts.; n w, for E. Francis Riggs; cost, $3,600; Jno. Sweeny, builder.

WILLIMANTIC, CONN.—Rev. L. L. Potter of Hartford has purchased a building lot near the eminence from which the granite was taken for the Willimantic Water Works. It is one of the best sites in this section, and has a view for miles around.

Labor.

BOSTON, MASS.—Mar. 15, to discuss the question of eight hours. After A crowded meeting of Union No. 33, of the Brotherhood of Carpenters and Joiners of America, was held at Caledonian Hall, Eliot St., calling the meeting to order, the following resolution was adopted: Resolved, that as the office of a bureau of labor statistics was created by the labor organizations, we demand that the office now held by C. D. Wright be filled by an able agitator like George McNeill.

GLOUCESTER, MASS. — The stone-cutters have presented to the quarry agents the following schedule of wages; First-class quarrymen, $2 per day; second-class, $1.75; laborers, $1.50; blacksmiths, $2.75; first-class teamsters, $2; second-class teamsters, $1.75; cutting paving by the hundred, New York and large Boston, from dimension stone, $2; from grout, $2.50; small Boston, from dimension stone, $1.65; from grout, $2; rough Philadelphia, from dimension stone, $1.50; from grout, $2; culls, $1.

These prices give about fifteen per cent advance on the prices now prevailing. It seems quite probable that an amicable adjustment of the whole matter will be the outcome.

WORCESTER, MASS. — The Worcester bricklayers, plasterers and tenders have organized a union and fixed prices for a year from May 1 as follows: Tenders $2.50 a day, plasterers and bricklayers $3.50 a day. Stone masons are to fix their own prices.

Public Buildings.

CHEYENNE, WYO. T. — A bill has been introduced in the Legislature for a $100,000 capitol here.

COUNCIL BLUFFS, IA.—D. W. Townsend, of Marshalltown, Ia., has in connection with Messrs. Wakeman Bros., the contract for the new court-house for $142,000, for which the work of excavation has just been begun; Echo & Mann, architects.

EASTHAMPTON, MASS. — The town appropriates $5,000 for a fire-engine house.

MARSHALLTOWN, IA.—Mr. D. W. Townsend, of Marshalltown, has under construction the Marshalltown, Ia., court-house, to cost $115,000; J. C. Cochrane, of Chicago, architect.

PETERBORO, N. H. — The town has voted $10,000 for remodelling and refitting the Town Hall.

WASHINGTON, D. C.—Senator Morrill has introduced a bill to appropriate $300,000 for the erection of an extension of the executive mansion, on the south of the present structure, of equal and similar exterior character, and to be connected with the executive mansion by a corridor.

WILBRAHAM, MASS. — Work on the memorial hall has been suspended for the present. The foundation is not yet finished. C. E. Peck has the contract, and the building is to be finished by November 1.

WINCHESTER, MASS. — Plans have been perfected here for the building of a new town-hall, to cost about $50,0000. The plans will be submitted to the town meeting to be holden on the 22 inst.

Railroad Buildings.

CHICAGO, ILL.—One-st'y freight-house; cost, $26,000; owners, Western Transit Co.; architects, Gordon & Coyle.

SUSPENSION BRIDGE, N. Y. — President Depew and Superintendent Toucey of the New York Central and Hudson River Railroad have decided upon the immediate building of a new depot and passenger-station at this place, close to the site of that destroyed by fire about two years ago.

School-Houses.

CAMBRIDGE, MASS.—Less than $600 is now wanted to complete the proposed sum of $36,000 to be devoted to the new library and lecture-room building of the Cambridge Divinity School.

CHICAGO, ILL.—*Congress St.*, cor. Lincoln St., three-st'y school-house; cost, $100,000; City of Chicago, owner.

DODGE CITY, KAN.—H. M. Hadley, of Topeka, Kan., is building a ward school-house, two-st'y brick, 49′ x 55′, tin roof; cost, $8,000.

PATERSON, N. J. — Brick school-house on Main St.; cost, $8,100; Andrew Derrom, architect.

SULPHUR SPRINGS, TEX. — A school-building, to cost $15,000, is to be erected here; W. D. Hunsucker, contractor.

WASHINGTON, D. C. — Two-st'y brick school-house, s w cor. Sixth and F Sts., for Rev. E. D. Donnelly, pastor St. Dominic's Church; cost, $10,000; P. N. Dwyer, architect.

Stables.

BRIDGEWATER, MASS. — The Senate Committee on Public Charitable Institutions has reported a resolve appropriating $5,000 for moving and repairing a barn, building stock sheds, etc., at the Bridgewater Workhouse.

BROOKLYN, N. Y.—*Prospect Ave.*, n s, 20′ e Hamilton Ave., three-st'y frame stable, tin roof; cost, $1,500; owner, H. Cortts, 220 Seventeenth St.; builder, J. Stribler.

PROPOSALS.

Johnson Ave., No. 48, n s, 50′ w Lorimer St., two-st'y frame stable and shop, tin roof; cost, $1,200; owner and builder, Wm. Staats, Lorimer St., cor. Johnson Ave.; architect, Th. Engelhardt.

GERMANTOWN, PA.— Brick stable and wagon-house; s s, Queen St., e Morris St.; owners, Owen & Ravey, No. 6 Duval St.

MINNEAPOLIS, MINN.—F. B. Hart, two-st'y brick veneer barn, head of Prospect St.; cost, $3,700.

H. C. Vaughn, three-st'y wood stable, Grant St., bet. Nicollet and First Aves; cost, $8,000.

PHILADELPHIA, PA.— E. Macavoy, two-st'y brick stable, s w s, Armat St., bet. Hancock and Willow Sts.

J. E. Sickel, 5418 Haverford Ave.; two-st'y brick stable; w s, Downing St., bet. Fifty-fourth and Fifty-fifth Sts.

Two-st'y brick stable; s s, Master, bet. Nineteenth and Twentieth Sts.; owners Haibach & Auchter, Twenty-sixth and Thompson Sts.

Messrs. Wilson Bros. & Co. are the architects of a stable for Mr. Frank McLaughlin.

ST. LOUIS, MO.—The Missouri Railway Co. is to build a two-st'y brick car-stable; cost, $17,000; Milburn & Rich, contractors.

WASHINGTON, D. C.—Two-st'y stable on E St., between Nineteenth and Twentieth St., n w, for the Herdic Phæton Co.; cost, $10,000.

Two-st'y brick warehouse on Four-and-one-half St., between H and I Sts., s w, for A. Depue; cost, $3,500.

Stores.

BROOKLYN, N. Y.—*Flushing Ave., No.* 1001, n s, 58 e Bogart St., one-st'y frame (brick-filled) store and tenement, tin roof; cost, $4,000; owner, Andrew Imhoff, 999 Flushing Ave.; architect, Th. Engelhardt.

De Kalb Ave., n s, 150′ e Marcy Ave., four-st'y brick store and tenement, tin roof; cost, $12,000; owner and builder, M. J. McLaughlin, 100 Kosciusko St.; architect, J. D. Hall.

Broadway, e s, 50′ n Belvidere St.; four-st'y brick store and tenement, tin roof; cost, $9,000; owner, C. F. Winkemeier, 433 Grand St.; architect, E. F. Gaylor; builders, G. Lehrian's Sons and M. Metzen.

Montrose Ave., n e corner Lorimer St., 2 four-st'y brick and Belleville stone stores and tenements, tin roofs; cost, total, about $13,000; owner, O. Huber, Meserole St., s e corner old Bushwick Ave.; architect, J. B. Berlenbach.

Third St., No. 391, w s, 50′ n North Eighth St., four-st'y frame (brick filled) store and tenement, tin roof; cost, $6,000; owner, Mr. Belgier, 391 Berry St.; architect, A. Herbert.

Hamburg Ave., Nos. 45 *and* 47, corner Melrose St.; two three-st'y frame stores and tenements, tin roofs, (brick filled); total cost, $9,000; owner, Peter Kaiser; 210 Ten Eyck St., architect, Th. Englehardt; builders, C. Wilber and F. Roch.

Fulton St., n s, 20′ w Verona Pl., four-st'y brick store and dwell., tin roof; cost, $7,000; owner, Giorine Giannini, Jamaica plank road, opposite Schenck Ave.; architect, Amzi Hill.

Grand St., No. 590, three-st'y brick store and tenement, tin roof; cost, $4,300; owner, Joseph Carney,

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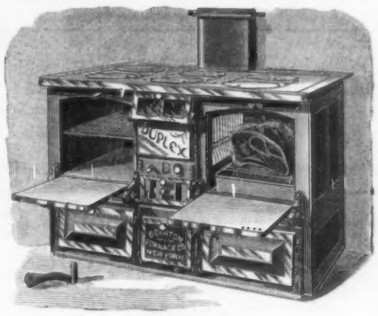

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BUILDING INTELLIGENCE.

253 Hewes St.; builders, Doyle & Brazel and Mr. Canfield.

CHICAGO, ILL.—*State St.*, three-st'y store; cost, $9,000; owner, A. Zulfer; architect, W. Frank.

State St., 3 three-st'y stores; cost, $20,000; owners, Brinkman, Madling & Clueso; architect, C. Frey.

Wabash Ave., No. 275 two-st'y store; cost, $20,000; owner, W. C. Lebenstine; S. S. Beman, architect.

Osgood St. No. 147, three-st'y store; cost, $5,000; owner, F. Boening; architect, Anderson.

Archer Ave., store; cost, $3,000; owner, C. Kaiser.

Clark and Indiana Sts., four-st'y store; cost, $15,000; owner, H. C. Durand; architect, S. M. Randolph.

Ogden Ave., three-st'y store; cost, $14,000; owner, W. O'Brien; architect, G. Williamson.

May St., three-st'y store; cost, $7,000; owner, F. Matt; architect, A. Fosler.

Division St., three-st'y store; cost, $8,000; owner, C. Schnert; builder, J. Walcott & Son.

Blue Island Ave., two-st'y store; cost, $5,000; owner G. Hans.

North Halsted St., two-st'y store; cost, $4,000; owner, M. Hermann.

Archer Ave., two-st'y store; cost, $4,000; owner, T. Bowers.

JERSEY CITY, N. J.—Brick building corner Warren and Sussex Sts., for Nicholas Topin, Esq.; cost, $20,000; architect, E. Simon.

KANSAS CITY, MO. — Peter Soden, four-st'y brick business block, 1113 and 1115 Main St.; cost, $35,000.

Newby & Son, five-st'y brick business block, Hickory St.; cost, $50,000.

MILWAUKEE, WIS. — Brick store on Twelfth St., for Mr. Anton Welky; cost, $3,000.

Brick store on Walnut St., for Jacob Poss; cost, $5,000.

Brick store for Ph. Best Brewing Co., on Fourth St.; cost, $16,000.

Brick store for C. Bauer, on Walnut St.; cost, $3,000.

Brick store on Grove St., for G. H. Benzenberg; cost, $5,000.

Brick store on Grove St., for Kroegur Bros.; cost, $18,000.

MINNEAPOLIS, MINN.—P. Nordberg, two-st'y brick store, 512-16 Bedar Ave.; cost, $8,000.

ORLANDO, FLA.—Charles H. Downes of Portsmouth, N. H., will superintend the building of a brick block of ten stores which Hon. Frank Jones of the same town is going to build here.

PHILADELPHIA, PA. — Two small stores are being erected at Ridge Ave. and Oxford St., under the supervision of Mr. Thos. P. Lonsdale. The owners are Messrs. Landis and Errisman.

SIOUX CITY, IOWA.—The contracts have been made for a three-st'y double house for Schulein Bros. on corner of Fourth and Jones Sts. The brick work will be done by J. Schulsbaugh, and the carpenter-work by A. Halseth; cost, bet. $25.000 and $30,000.

WASHINGTON, D. C.—Three-st'y brick store and dwell. on Pennsylvania Ave. bet. Seventeenth and Eighteenth Sts., n w, for Joseph Gawler; cost, $12,000 architect, F. T. Schneider.

YONKERS, N. Y.—Isaac F. Washburn of Sing Sing, will shortly commence to build a four-st'y store with flats, on the corner of Main and Mill Sts., from plans by D. & J. Jardine; cost, bet. $20,000 and $30,000.

Tenement-Houses.

BROOKLYN, N. Y. — *Fourth St., No.* 144, s s, 200′ w Hoyt St., three-st'y frame tenement, tin roof; cost, $3,000; owner, James Smith, 44 Fourth St., South Brooklyn; builder, Wm. Murphy.

Cook St., s s, 125′ e Graham Ave., three-st'y frame (brick-filled) tenement, tin roof; cost, $3,500; owner, architect and builder, Andrew Schmitt, 238 Lynch St.

Evergreen Ave., w s, 77′ n Greene Ave., three-st'y frame tenement, tin roof, brick-filled; cost, $3,200; owner, C. W. Smith, 84 Taylor St.; architect, G. Hillenbrand; builders, C. Dehler and J. Armendinger.

Herkimer St., s s, 25′ w Ralph Ave., three-st'y frame tenement, tin roof, brick-filled; cost, $3,000; owner, John Gibbins, 958 Herkimer St.; architect, I. D. Reynolds; builder, J. H. Barton.

Myrtle Ave., s s, 133′ 5″ w Palmetto St., three-st'y frame lodging-house and restaurant, gravel roof, brick-filled; cost, $5,000; owner, S. C. Edwards, 577 Manhattan Ave.; architect, E. F. Gaylor; builders, J. Hafford and Marinus & Gill.

Plymouth St., n s, 31′ w Little St., four-st'y brick tenement, gravel roof; cost, $8,500; owner and builder, Peter Donlon, 724 Sackett St.; architect, Mercein Thomas.

Clason Ave., e s, 100′ s Park Ave., four-st'y frame (brick-filled) tenement, tin roof; cost, $7,000; owner, M. E. McChesey, on premises; architects, H. Vollweiler and J. Hertlin.

MINNEAPOLIS, MINN. — H. E. Fletcher, 4 two-st'y frame tenements, 1100-1106 Third Ave.; cost, $5,000.

Trafton Bros.; 5 two-st y frame tenements, 519-523 James Ave.; cost, $3,000.

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BUILDING INTELLIGENCE.

Warehouses.

WASHINGTON, D. C.—Three-st'y brick warehouse, Va. Ave., bet. Sixth and Seventh Sts., s w, for S. C. Palmer; cost, $12,000; N. R. Grimm, architect; R. W. Darby, builder.

Miscellaneous.

MINNEAPOLIS, MINN. — The prospect for this year is good. The difference between the amount of work this season and that of last is marked. This year there is more work, it comes in earlier, and it is of a better class. Last spring much new work was in the hands of mechanics and small dealers who built because there was nothing else to do, and who built to sell. The work of this year is more in the hands of capitalists. The plans are accepted too for several public buildings, the Exposition Building, Masonic Temple and Public Library.

NASHVILLE, TENN.—A gymnasium, to cost $15,000, is to be erected by the Athletic Club of this place.

NEW YORK, N. Y.—Charles R. Yandell & Co., the art leather-work manufacturers, 140 Fifth Ave., N. Y., will erect a large gallery adjoining their estate this spring. It is Mr. Yandell's intention to devote this gallery to American art exhibitions.

PARIS, ILL. — A friend of the Paris Y. M. C. Association has given them a finely-located site for a building.

PHILADELPHIA, PA.—Estate of Henry Muller, two-st'y brick wash-house, 35′ x 81′, w s Jefferson St., between Thirtieth and Thirty-second Sts.

Wm. D. Loverell, three-st'y brick building, 18′ x 27′, 1727 West Twentieth St., between Columbia Ave. and Montgomery St.

Wolstencroft & Sons, brick engine-room, 16′ x 28′, Mulberry and Bridge Sts.

SAVANNAH, GA. — W. F. Chaplain has received the contract at $33,236 for erecting a hall for the Odd Fellows.

STILLWATER, MINN.—Stillwater building contractors report the prospects for building operations this season much more flattering than for several seasons past. The Jassoy Block, now being constructed cor. Third and Chestnut Sts., and the block in process of construction Third and Oak Sts., both of which are to be large and imposing structeres, are the only business blocks so far contracted for; but it is said that contracts are about to be let for the construction of several fine blocks on Main St., one of which will be about the most imposing structure in the city.—*Pioneer Press.*

UTICA, N. Y.—The Odd Fellows Temple, cor. Columbia and Washington Sts., will be four-st'y, brick, with stone trimmings.

Bids and Contracts.

CHICAGO, ILL.—The following bids on carpenterwork of the public library rooms in the city-hall were received: —

A. E. Tortin (in couple), $13,240; R. T. Meissner (awarded), $18,301.93; Cudell & Lehman, $21,088.37.

MUNCIE, IND. — J. S. Farrell & Co., of Indianapolis, Ind., has been awarded the plumbing works and sanitary fixtures for the new Delaware County, Ind., Court-House.

NEWARK, N. J. — A. T. Wing, manager of the Flynt Building and Construction Co., of Palmer, Mass., signed papers last week with the well-known Clark thread manufacturers of Newark, N.J., for the erection of extensive thread-works in this city for a new firm which will be known as Marshall & Co. The two main buildings will each be 300′ long, and besides these the contract calls for a counting-room, engine-house, boiler-house and a steam-stack 175′. The contract price is over $100,000. The work is to be started at once as the roof of the mill must be on by July 1.

TROY, N. Y. — Estimates have been received and opened for work to be done on House of the Good Shepherd, to be erected on People's Ave., Troy, with the following result: —

Masonwork: John Smith, $34,423; Broderick & Jackson, $25,972; Button & Buckley, $21,624.

Longmeadow stone: John Smith, $6,214; Norcross Bros., $5,985; Don & McDonald, $5,400.

Carpentering and painting: John McBride, $27,995; Charles Duncan, $27,883; Witze & Co., $24,025; Lemmon & Robinson, $22,576; John Phalan, $19,947.72.

Plumbing and gas-fitting: Sam Morris, $3,841; Holland & Thompson, $3,531.43; William Ferguson, $3,467; Joseph P. Maguire, $2,585.

Slating: Wassant & Co., $2,001.18; David White, $1,925; Williams & Manogue, $1,579.

Ironwork: Sullivan & Ehler, $2,955; Michael Mahoney, $2,641.43.

Heating and ventilation: Joseph P. Maguire, $7,600; Walker, Pratt & Co., $6,874; Holland & Thompson, $5,775.

Amount of the highest estimate in each added together, $85,029.118; amount of lowest, $59,552.15.

Estimates were accepted and contracts signed for this sum. Amount of appropriation, $60,000. P. O. Grady, Jr., architect.

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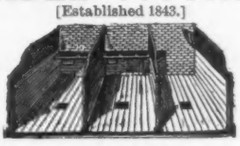

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BUILDING INTELLIGENCE.

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COMPETITION.

CITY-HALL. [At Vincennes, Ind.]

The City Council of the City of Vincennes, Ind., invites architects to submit plans for a new city building, to be erected upon the city lot fronting on Main, Fourth and Busseron Sts. Said plans to be submitted to the Committee on Public Buildings and Improvements **on or before the 1st day of April, 1886.** For further information and particulars address C. M. Allen, Jr., City Clerk, Vincennes, Ind. The City Council reserves the right to reject any and all plans submitted. *The cost of said building is limited to* $50,000 (fifty thousand dollars).

JOSEPH REYMAN,
JOSEPH L. INDERIEDEN,
EUGENE HACK,
} Committee on Public Buildings, etc.

Attest: C. M. ALLEN, JR., City clerk.

PROPOSALS.

LIGHTING. [At Asheville, N. C.]

Proposals are hereby invited and will be received **until April 1, prox.,** for lighting the city of Asheville, N. C., with electricity or gas. Lighting area about one-and-one-half miles square; population 6,000.

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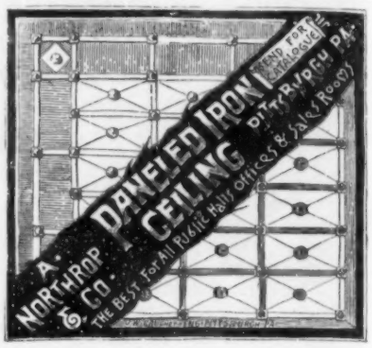

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PROPOSALS.

COURT-HOUSE. [At Stanton, Dak.]

STANTON, January 6, 1886.

Notice is hereby given that sealed bids will be received by the undersigned **up to Monday, April 5, 1886,** for the construction of a court-house and jail in Stanton, Mercer County, Dakota, said court-house to be frame, 14′ x 22′, and the jail to be 12′ x 18′. Plans and specifications may be seen at my office.

The Board of County Commissioners reserves the right to reject any and all bids.

By order of the Board. A. C. MACORORIO,
534 County Clerk.

TOWN-HALL. [At College Hill, O.]

Sealed proposals will be received by the Council of the village of College Hill, Hamilton County, O., **until 12 o'clock, Monday, March 29, 1886,** for the construction of a town-hall in said village, according to plans and specifications on file in the office of Samuel Hannaford, architect, Cincinnati, O.

The Council reserves the right to reject any or all bids; each bid to be guanteed according to law. Bids should be addressed to

EDWARD HENSHAW,
534 Mayor.

JAIL. [At Lexington, S. C.]

LEXINGTON COURT-HOUSE, S. C., Feb. 22, 1886.

Sealed proposals will be received by the undersigned **until 1st day of April next,** for the building of a new jail for Lexington County. The building to be of brick; the jail proper to be of iron, or iron and steel.

Plans of the building and anything connected therewith may be seen by calling on Mr. T. W. Kaufmann, Secretary Board, at Lexington Court-House.

Bids will be received for the building and jail work separately, or the whole together.

The Commissioners reserve the right to reject any and all bids.

S. M. SIGHTLER,
J. J. DERRICK.
W. S. KEISKER,
535 County Commissioners, Lexington County.

TIMBER. [At Sand Beach, Mich.]

UNITED STATES ENGINEER OFFICE, 34 WEST CONGRESS ST., DETROIT, MICH., March 2, 1886.

Separate sealed proposals in triplicate will be received at this office **until 2 o'clock,** P. M., **on March 23, 1886,** at which time and place they will be opened in the presence of bidders, for furnishing 200 pieces white pine timber for crib work at the Harbor of Refuge at Sand Beach, Mich.

The Government reserves the right to reject any or all proposals.

Blank proposals and full information as to the manner of bidding, conditions to be observed by bidders, and terms of contract and payment, will be furnished on application to this office. O. M. POE,
Lieut. Col. of Engineers, Bvt. Brig.-Gen., U. S. A.
534

PROPOSALS.

CAST-IRON WATER-PIPE. [At Washington, D. C.]

OFFICE OF THE ENGINEER COMMISSIONER, WASHINGTON, D. C., March 2, 1886.

By direction of the Board of Commissioners, sealed proposals will be received at this office **until 12 o'clock, noon, on Tuesday, March 23,** for furnishing 15 000 lineal feet 6-inch cast-iron water-pipe, 30 6-inch four-way water-gates and boxes, and 10 6-inch two-way water-gates and boxes for the water-supply of Washington, D. C.

For specifications, blanks on which bids must be made, and all other information, apply at this office.

G. J. LYDECKER,
Major of Engineers, U. S. Army.
534 Engineer Commissioner, D. C.

IRONWORK FOR THE WEIR OF DAM NO. 6. [On the Great Kanawha, W. Va.]

U. S. ENGINEER OFFICE, CHARLESTON, KANAWHA CO., W. VA., March 1, 1886.

Proposals for the ironwork of the Weir, etc., of a movable dam on the Great Kanawha River, W. Va., will be received at the U. S. Engineer's Office, Charleston, Kanawha Co., W. Va., **until noon of April 1, 1886,** and opened immediately thereafter. Blank forms, specifications and all necessary information can be had by application to Mr. A. M. Scott, Resident Engineer. W. P. CRAIGHILL,
535 Lieut.-Col. of Engineers, U. S. A.

INFANTRY-SCHOOL. [At London, Ont.]

DEPARTMENT OF PUBLIC WORKS, OTTAWA, February 24, 1886.

Sealed tenders, addressed to the undersigned, and endorsed "Tender for Infantry School, London," will be received at this office **until Monday, 29th proximo,** for the several works required in the erection and completion of Infantry School, London, Ont.

Plans and specifications can be seen at the Department of Public Works, Ottawa, and at the office of Messrs. Durand & Moore, architects, London, Ont., on and after Monday, 15th proximo.

Persons tendering are notified that tenders will not be considered unless made on the printed forms supplied, and signed with their actual signatures.

Each tender must be accompanied by an *accepted* bank check, made payable to the order of the Honorable the Minister of Public Works, *equal to five per cent* of the amount of the tender, which will be forfeited if the party decline to enter into a contract when called upon to do so, or if he fail to complete the work contracted for. If the tender be not accepted the check will be returned.

The Department does not bind itself to accept the lowest or any tender.

By order, A. GOBEIL,
534 Secretary.

COURT-HOUSE. [At Clarksburg, W. Va.]

OFFICE OF THE CLERK OF THE COUNTY COURT OF HARRISON COUNTY, CLARKSBURG, W. VA., February 9, 1886.

Sealed proposals for the erection and completion of a court-house for Harrison County, at Clarksburg, W. Va., according to the plans and specifications now on file in this office, will be received by the County Court of said County, **until noon, on the 1st day of April, 1886.**

Each bidder must file with his bid a bond with good security in the penalty of $50,000, conditioned to erect and complete said building in every respect in accordance with the plans and specifications, should his bid be accepted. The work to be finished on or before the 1st day of November, 1887.

One-half of the contract price to be paid on or before the 1st day of November, 1887, and the balance to be paid on or before the 1st day of November, 1888.

Envelopes containing proposals to be marked "Proposals for Court-House," and addressed to the undersigned.

The Court reserves the right to reject any or all bids. JAMES MONROE,
535 Clerk.

PROPOSALS.

JOINERWORK AND WOOD FLOORING. [At Oxford, Miss.]

OFFICE OF THE SUPERVISING ARCHITECT, TREASURY DEPARTMENT, WASHINGTON, D. C., March 12, 1886.

Sealed proposals will be received at this office **until 2 P. M., on the 5th day of April, 1886,** for furnishing and fixing in place all the joinerwork finishing and wood flooring required for the court-house, post-office, etc., building at Oxford, Miss., in accordance with drawings and specification, copies of which and any additional information may be had on application at this office or the office of the superintendent.

Bids must be accompanied by a certified check for $300. M. E. BELL, Supervising Architect.
534

WATER-CLOSETS. [At Norfolk, Va.]

NAVY DEPARTMENT, BUREAU OF MEDICINE AND SURGERY, WASHINGTON, D. C., March 4, 1886.

Sealed proposals, endorsed "Proposals for Water-Closets," will be received at the Bureau of Medicine and Surgery, Navy Department, Washington, **until Monday, April 5, 1886, at 11** A. M., when they will be publicly opened, for supplying ten of Mott's Inodoro water-closets, with fixtures, to be delivered, free of delivery charges, at the naval hospital, Norfolk, Va.

Schedules of the articles, with information as to the specifications, delivery, conditions and security required, and forms of offers can be had on application to the Bureau.

The right is reserved to reject any or all bids, and bids only from manufacturers of, or regular dealers in, the articles required will be considered.

F. M. GUNNELL,
535 Chief of Bureau.

HOUSE OF CORRECTION AND STATE PRISON. [At Marquette, Mich.]

OFFICE OF COMMISSIONERS STATE HOUSE OF CORRECTION AND PRISON, UPPER PENINSULA, MICHIGAN, MARQUETTE, MICH., February 27, 1885.

Sealed proposals for the furnishing of materials and construction of the State House of Correction and branch of the State Prison in the Upper Peninsula, Michigan, at Marquette, Mich., under the acts of the Legislature, No. 149, Public Acts of 1885.

Sealed proposals are invited by the Board of Commissioners appointed under said act 148, **until Wednesday, April 28, at 5 o'clock,** P. M.

Plans, specifications and instructions to bidders may be seen on and after the 15th day of March, 1886, at the office of the Board of Commissioners at Marquette, Mich, and at the office of the architects, Wm. Scott & Co., Nos. 4 and 5, Wayne County Savings Bank Building, Detroit, Mich.

Proposals must be submitted for the entire work, and the Board of Commissioners reserve the right to accept such proposals as they may deem for the best interests of the State or reject all.

Proposals are required to be submitted on the schedule blanks and accompanied by a copy of instructions to bidders, both of which, with copies of the act will be furnished to intending bidders upon application to the Secretary of the Board.

All bidders will be required to furnish bond and security or a certified check, payable to the order of the Board of Commissioners equal in amount to two-and-one-half per cent of the bid submitted, which bond or certified check will be forfeited to the Board of Commissioners in the event of the failure or refusal of the bidder to enter into contract with the Board should the bid be accepted. All proposals must be sealed and indorsed "Proposals for State House of Correction and branch of State Prison, Upper Peninsula, and addressed to the Board of Commissioners at Marquette." For further information apply to the Secretary of the Board at Marquette, Mich.

E. P. ROYCE,
President of Board of Commissioners for State House of Correction Prison, Upper Peninsula.
Attest: GEO. P. CUMMINGS, Secretary.

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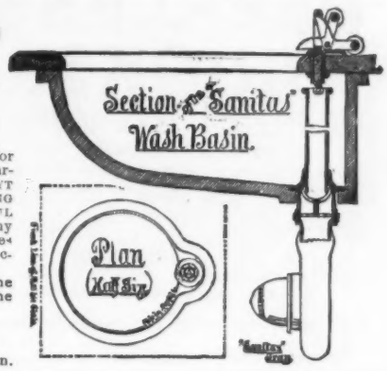

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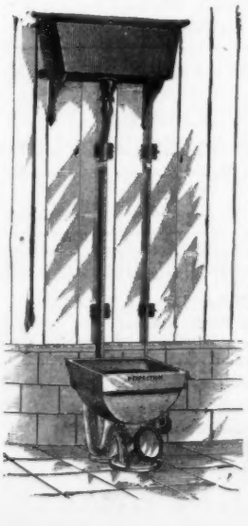

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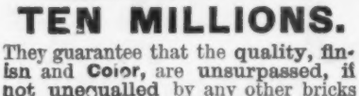

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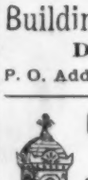

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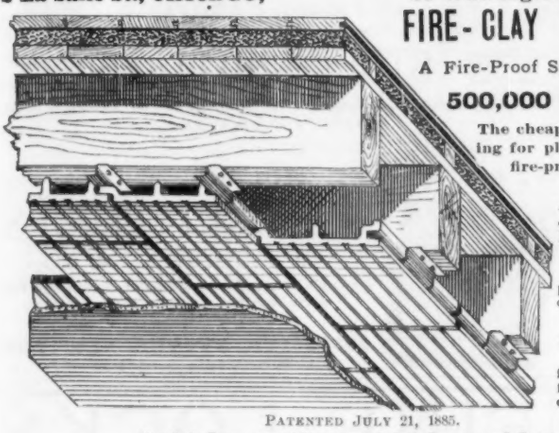

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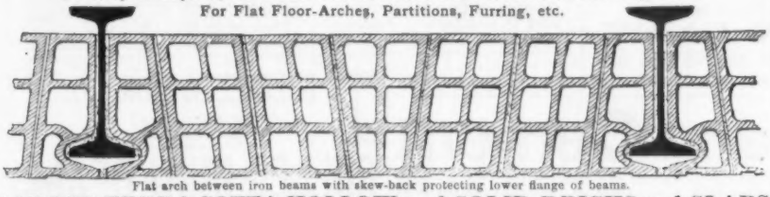

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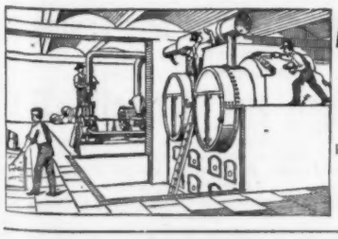

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